SUPREME COURT OF THE UNITED STATES.

OCTOBER TERM, 1913.

No. 611.

STEWART MINING COMPANY, PLAINTIFF IN ERROR,

vs.

ONTARIO MINING COMPANY, STANLEY A. EASTON, AND MYRON A. FOLSOM.

IN ERROR TO THE SUPREME COURT OF THE STATE OF IDAHO.

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a In the Supreme Court of the State of Idaho.

STEWART MINING COMPANY, a Corporation, Appellant,
vs.
ONTARIO MINING COMPANY, a Corporation; STANLY A. EASTON and MYRON A. FOLSOM, Respondents.

Transcript on Appeal.

Appeal from the District Court of the First Judicial District of the State of Idaho in and for Shoshone County.

Tyson S. Dines, Gunn, Rash & Hall, Cullen, Lee & Hindman, Featherstone & Fox, Attorneys for Appellant.

Myron A. Folsom, John P. Gray, J. E. Gyde, Attorneys for Respondents.

1 In the District Court of the First Judicial District of the State of Idaho in and for the County of Shoshone.

STEWART MINING COMPANY, a Corporation, Plaintiff,
vs.
ONTARIO MINING COMPANY, a Corporation; STANLEY A. EASTON and MYRON A. FOLSOM, Defendants.

Complaint.

The plaintiff complains of the defendants, and for cause of action alleges:

I.

That the plaintiff is, and has been, since the 29th day of August, 1902, a corporation, organized and existing under and by virtue of the laws of the State of Idaho, and authorized and empowered to own, possess and enjoy the mining claim and property hereinafter described.

II.

That the Ontario Mining Company is a corporation organized and existing under and by virtue of the laws of the State of Idaho.

III.

That the plaintiff is and has been since long prior to the
2 acts of the defendants herein complained of, the owner in fee, in possession, and entitled to the possession of that certain quartz lode mining claim named and designated the Senator Stewart Fraction lode mining claim, situate in Yreka Mining Dis-

trict, Shoshone County, State of Idaho, and of all veins, lodes and ledges throughout their entire depth, the tops or apexes of which lie inside the surface lines of said mining claim extended down vertically, alt-ough such veins, lodes or ledges may so far depart from a perpendicular in their course downward as to extend outside of the vertical side lines of the said claim, which said mining claim is particularly described in the United States patent issued therefor as follows:

Beginning at corner No. 1, from which the corner common to Sections one (1), two (2), eleven (11) and twelve (12) of Township Forty-eight (48) North, Range two (2) East B. M., bears north eighty-six (86) degrees, eleven (11) minutes, thirty (30) seconds west, three hundred twenty and thirty-eighth hundredths (320.38) feet; thence south twenty-four (24) degrees, thirty-eight (38) minutes west, six hundred (600) feet to corner No. 2, thence north sixty-three (63) degrees, fifty-five (55) minutes west, thirteen hundred eighty-five and four-tenths (1385.4) feet to corner No. 3, thence north twenty-four (24) degrees, thirty-eight (38) minutes east, five hundred (500) feet to corner No. 4, thence south sixty-eight (68) degrees, three (3) minutes east, thirteen hundred eighty-six and forty-seven hundredths (1386.47) feet to place of beginning, containing an area of sixteen and one hundred and ninety-six thousandths (16,196) acres, more or less.

3 That within said Senator Stewart Fraction quartz lode mining claim is a certain vein or lode bearing silver, lead and other valuable minerals of which said vein or lode and the ore and mineral therein contained this plaintiff is the owner in possession and entitled to the possession.

That the top or apex of said vein or lode crosses the easterly end line of said claim at approximately the center thereof between corners Nos. 1 and 2 and extends within the boundaries of said claim in a westerly direction, following the general course of said claim, for a distance of seven hundred five (705) feet, more or less.

That said vein or lode has a downward course and descends into the earth southerly and beyond the south boundary and side line of said claim into and beneath the surface of the Ontario quartz lode mining claim, designated as Survey No. 755.

IV.

That the defendants, by means of tunnels, drifts, stopes and other underground workings, have within the past two years at divers and sundry places beneath the surface of the Ontario quartz lode mining claim entered upon and into said vein or lode, the top or apex of which is within said Senator Stewart Fraction claim, as aforesaid, between a vertical plane drawn downward through the east end line of said claim extended southerly in its own direction indefinitely, and a vertical plane drawn downward through a line seven hundred five (705) feet westerly from said east end line, and parallel

4 thereto, extended as aforesaid, and have without the consent of the plaintiff wilfully and wrongfully mined, extracted, and removed therefrom a large quantity of valuable ore and mineral,

the property of the plaintiff, and known by them and each of them to be the property of the plaintiff, and converted the same to their own use, the exact quantity of which said ore and mineral is unknown to plaintiff.

That the mining operations conducted and carried on by defendants in mining, extracting and removing the ore and mineral from said vein, as aforesaid, have been so conducted and carried on that the evidence of the quantity and value of the ore and mineral so mined, extracted and removed has been largely destroyed, and it will be necessary to have a discovery and disclosure by defendants of the quantity and value of such ore and mineral.

V.

That the said defendants are now engaged in mining, extracting and removing the ore and mineral from said vein within the planes aforesaid and from beneath the surface of the said Ontario claim, and threaten to and will, unless enjoined and restrained from so doing, continue to mine, extract and remove the ore and mineral from said vein, the apex of which is within the said Senator Stewart Fraction mining claim, and from between the planes aforesaid, and will take and remove from said vein the entire value thereof, to the great and irreparable injury of this plaintiff.

VI.

That the mining operations conducted and carried on as aforesaid are conducted and carried on in the name of the defendant, the Ontario Mining Company, and, as plaintiff is informed and believes, and so alleges, said company was organized for the sole purpose of conducting such mining operations and of mining, extracting and removing said ore and mineral from said vein, the property of the plaintiff as aforesaid.

That the said individual defendants, Stanley A. Easton and Myron A. Folsom, are, and always have been, in control of said Ontario Mining Company, and are now directing, and always have directed, such mining operations.

That the proceeds from the ore and mineral taken from said vein are, as soon as received, distributed and paid over to said individual defendants; that said Ontario Mining Company is insolvent and unable to respond in damages for the taking and conversion of said ore and mineral.

VII.

That the plaintiff has no plain, speedy or adequate remedy in the ordinary course of the law.

Wherefore plaintiff prays judgment:

1. That the defendants be held to account to plaintiff for the proceeds of all ore and mineral mined, extracted, and removed from said vein or lode, as in this complaint alleged, and that the plaintiff have judgment therefor.

2. That an injunction issue out of this court enjoining and re-

straining the defendants, and each of them, from trespassing upon or further mining or extracting ore from said vein or lode during the pendency of this action, and that by the judgment herein said injunction be made perpetual.

3. And for costs and disbursements.

GUNN, RASCH & HALL,
HAPPY, CULLEN, LEE & HINDMAN,
FEATHERSTONE & FOX,
Attorneys for Plaintiff.

Residence and post office address, Wallace, Idaho.

Duly verified.

Filed Oct. 2, 1912.

(Title of Court and Cause.)

Answer and Cross-complaint.

Come the defendants above named, and answer the complaint as follows:

I.

They admit the allegations contained in paragraph one of the complaint.

II.

They admit the allegations contained in paragraph two of the complaint.

7 III.

In answer to paragraph three of the complaint herein, defendants admit that plaintiff is now and for a long time has been the owner in possession and entitled to the possession of the Stewart Fraction lode mining claim; and is the owner of all veins, lodes and ledges throughout the entire depth, the tops or apexes of which lie inside of the surface lines of said mining claim, extending downward vertically upon the downward course of said veins. The said defendants deny that said plaintiff is entitled to follow any vein which it is now engaged in working south of the south side line of the said Stewart Fraction lode mining claim. Defendants admit that the exterior boundaries of said Stewart Fraction lode mining claim are correctly set forth in paragraph three of the complaint. Defendants deny that said plaintiff is the owner of all of the premises within the said exterior boundaries as thus described; and deny that a United States Patent conveyed or attempted to convey all premises within the said exterior boundaries as set forth in the complaint herein. Defendants allege that said patent in addition to the description contained in paragraph three of the complaint contained the following language:

"Expressly excepting and excluding from these presents all that portion of the ground hereinbefore described embraced in said

Royal Knight lode claim Survey No. 1639 AM., and that
8 portion of said Survey No. 1314 AM. in conflict with said Senator Stewart Fraction lode mining claim * * * and also all veins, lodes and ledges throughout the entire depth, the tops or apexes of which lie inside of such excluded ground."

Defendants admit that within the said Senator Stewart Fraction quartz lode mining claim there is a certain vein or lode; and admits that the said plaintiff is the owner as against these defendants of so much of said vein or lode and the ore and minerals therein contained, as lies within the planes drawn downward vertically through the side lines and end lines of the said claim. Said defendants deny that the said vein or lode crosses the easterly end line of said claim at approximately the center thereof, between corners numbers one and two; or crosses the said end line at all; and said defendants deny that said vein extends within the boundaries of said claim in a westerly direction following the general course of the same for a distance of seven hundred and five feet, or any distance whatever.

Said defendants deny that said vein or lode descends into the earth southerly, or beyond the south boundary, and side line of said claim, into or beneath the surface of the Ontario quartz lode mining claim designated as Survey Number 755.

9 Said defendants allege that the only vein known to exist within the Senator Stewart Fraction lode mining claim and upon which said plaintiff has been engaged in working, has a course substantially parallel to the end lines of said claim northerly and southerly, and dips easterly, and on its dip, passes beneath the east end line of said Senator Stewart Fraction lode mining claim.

IV.

Defendants deny that they have, or either or any of them has, by means of tunnels, or drifts, or stopes, or other underground workings within the past two years, or at all, at any place beneath the surface of the Ontario quartz lode mining claim entered upon or into any vein or lode, the top or apex of which is within said Senator Stewart claim as described in the complaint; and said defendant denies that they have, or either of any of them has wilfully or wrongfully mined or extracted, or removed from any vein having its apex within the Senator Stewart Fraction Lode Mining Claim as alleged in the complaint or at all, a large, or any quantity of valuable ore or mineral known by them or either or any of them to be the property of the plaintiff; and said defendants deny that they have converted to their own use any mineral or ores whatever, which belong to the said plaintiff herein.

V.

Defendants admit that they are mining ore from beneath
10 the surface of the said patented lode mining claim known as the Ontario lode mining claim, and within planes drawn downward vertically through the east end line of the Senator Stewart lode claim and a plane drawn parallel thereto through a point seven hundred and five feet west of said end line; and said defendants

deny that said ore or minerals are a part of any vein having its apex within the Senator Stewart lode mining claim as described in the complaint or at all.

VI.

Defendants admit that the Ontario Mining Company is and for several months last past has been conducting mining operations beneath the surface of the Ontario mining claim in its own name; and defendants allege that said operations are conducted rightfully and lawfully; but defendant denies that the said Easton and the said Folsom are conducting mining operations beneath the said surface of the said Ontario mining claim and deny that the said Ontario Mining Company was organized for the sole purpose of conducting such mining operations and *and* of mining, extracting, or removing ores or minerals from any one vein or lode, or from any vein which is the property of the plaintiff.

Defendants deny that the said individual defendants, Easton and Folsom are, or that they ever have been in control of said Ontario Mining Company otherwise than as stockholders, officers, and directors. Said defendants admit that the said Stanly A. Easton
11 is Secretary and Manager, and that said Myron A. Folsom is the President of the Ontario Mining Company, and that said Folsom has been a director and president of said Ontario Mining Company since about February 1, 1912.

Defendants deny that the proceeds from the ore and mineral taken from said vein or any vein are, as soon as received, or otherwise, or at all, distributed or paid over to said individual defendants, Easton and Folsom. Said defendants deny that said Ontario Mining Company is insolvent, or unable to respond to damages for the taking of said ore and mineral.

VII.

Defendants allege that Jonathan Bourne, Jr., is and for more than twenty years last past has been the owner in the possession and entitled to the possession of said Ontario lode mining claim, and all ores and minerals therein contained by virtue of a patent issued to him by the United States on February 1, 1892. That on or about May 1, 1911, for a valuable consideration, said Jonathan Bourne, Jr., made, executed and delivered to Stanly A. Easton, and his assigns a lease of the said Ontario mining claim, and the ores and minerals therein contained, with the right to possess and work the same until July 1, 1914; that thereafter the said Stanly A. Easton, for a valuable consideration, and with the consent of the said Bourne assigned the said lease to the said Ontario Mining Company, and the said Ontario Mining Company entered into possession of the
12 said Ontario lode mining claim and worked the same; and the said Ontario Mining Company is now and ever since said assignment has been in possession and entitled to the possession of the said Ontario lode mining claim, and all veins having their apex within, or which lie beneath the said patented surface of the said claim, and has worked said veins and minerals to extract ore there-

from as it was rightfully entitled to do. The said Ontario Mining Company has expended large sums of money in developing and improving and equip-ing for mining operations the said property; that no ore has been removed by said company except from beneath the surface of said Ontario lode mining claim; that said operations have been conducted openly and with the knowledge of the plaintiff herein; and the said plaintiff has never, until the filing of the complaint herein claimed or pretended that it owned the ore bodies which said Ontario Mining Company has been working by virtue of its ownership of the Senator Stewart Fraction lode mining claim, or of any vein contained therein.

And the defendant Ontario Mining Company by way of cross complaint against the plaintiff herein complains of the said plaintiff and alleges:

I.

Said plaintiff Stewart Mining Company is and for a long time has been a corporation organized under the laws of the State of Idaho.

13 II.

The said Ontario Mining Company is now and for more than a year last past has been a corporation organized under and by virtue of the laws of the State of Idaho.

III.

That Jonathan Bourne, Jr., is now and since prior to the year 1892 has been the owner of said Ontario lode mining claim, and since the year 1892 has owned and held the same by virtue of a patent issued by the United States of America; the said Ontario lode mining claim is described as follows:

"Beginning at corner number one, whence U. S. M. M. number 1 bears north seventy-five degrees fifty three minutes forty nine seconds west four thousand nine hundred eighty one and one-tenth feet; thence north fifty degrees thirty three minutes east six hundred forty feet to corner number two; thence south sixty seven degrees forty six and one half minutes east seven hundred thirty three and three tenths feet to corner number three; thence south fifty degrees thirty three minutes west six hundred forty seven feet to corner number four, thence north sixty seven degrees nineteen minutes west seven hundred seventy feet to the place of beginning."

That said Bourne during all of said time until about the month of May, 1911, has been in the possession and entitled to the possession of said Ontario lode mining claim, and all veins, ores and minerals therein contained.

14 IV.

That on or about May 1, 1911, the said Bourne for a valuable consideration made, executed and delivered to Stanly A. Easton, his

heirs, and assigns, a lease of said Ontario mining claim, the ores and minerals therein contained with the right to enter into possession of the said mining claim, and take and remove therefrom any and all minerals contained therein, said lease to expire on July 1, 1914.

V.

That said Ontario Mining Claim contains several veins and ore bodies which have been worked and explored, and from which mineral has been removed.

VI.

That some time after the execution and delivery of said lease above referred to, said Stanly A. Easton with the consent of the said Bourne, assigned all his right, title and interest in and to said lease to the said Ontario Mining Company, the cross complainant herein; that the said Ontario Mining Company thereafter entered into possession of the said Ontario lode mining claim, ever since has been, and now is in possession and entitled to the possession of the same.

VII.

That plaintiff herein, the said Stewart Mining Company claims an estate or interest in the said Ontario mining claim, and the ores and veins therein contained adverse to the said Ontario Mining Company, and to the leasehold interest of the said Ontario Mining Company; that the exact nature of the said Stewart Mining Company's claim or claims is unknown to the Ontario Mining Company; that said Ontario Mining Company alleges that whatever the said claim or claims may be, they are false and groundless and are a cloud upon said Ontario Mining Company's right, title and interest in and to said mining claim, and veins and ores therein contained.

Wherefore, the said Ontario Mining Company prays that

First: That said Stewart Mining Company may be required to set forth any claim or claims which it has or makes in or to said Ontario mining claim and the veins and ores therein contained; and that adverse claims be determined; and that the same be declared to be false and groundless; and that the right, title and interest of the said Ontario Mining Company by virtue of the said lease may be quieted as against all claims of the said Stewart Mining Company.

Second: The Ontario Mining Company and said defendants Easton and Folsom pray that the said Stewart Mining Company take nothing by its complaint herein.

Third: That said defendants Ontario Mining Company, and Stanly A. Easton and Myron A. Folsom have and recover their costs herein expended.

Fourth: That said cross complainant Ontario Mining Company

have such other and further relief as may be agreeable to
16 equity.

MYRON A. FOLSOM,
JAMES E. GYDE,
JOHN P. GRAY,
Attorney- for said Defendants and said Cross-Complainant.

Residence & P. O. address of John P. Gray, Coeur d'Alene, Idaho.

Duly verified.

Service of the within Answer and Cross-Complaint accepted at Wallace, Idaho, Oct. 16, 1912.

FEATHERSTONE & FOX,
Att'ys for Plaintiff.

Filed Oct. 16, 1912.

(Title of Court and Cause.)

Stipulation.

It is stipulated and agreed by and between the attorneys for the respective parties to the above entitled action that the appeal from the order denying the application of the plaintiff for an injunction pendente lite and dissolving the restraining order issued in said action, may be heard and decided by the Supreme Court of the State either at Lewiston, or at Boise, at such time as the Court may determine, and said hearing may be had either before said Court, or the Judges at Chambers.

It is further stipulated that any appeal from the judgment in said cause, may be heard and decided by the Supreme Court
17 either at Lewiston, or at Boise.

Dated this 28th day of October, A. D. 1912.

GUNN, RASH & HALL,
HAPPY, CULLEN, LEE & HINDMAN, AND
FEATHERSTONE & FOX,
Attorneys for Plaintiff.
M. A. FOLSOM,
JAMES E. GYDE,
JOHN P. GRAY.
Attorneys for Defendants.

Filed Oct. 31, 1912.

(Title of Court and Cause.)

Answer to Cross-Complaint.

Now comes the above named plaintiff and for answer to the cross complaint of the defendant the Ontario Mining Company:

1. Admits the allegations of Paragraphs I, II, III and IV of said cross-complaint.

2. Denies that the said Ontario mining claim contains several veins and ore bodies which have been worked and explored and from which mineral has been removed, and alleges that all of the work and exploration in said claim has been done on and in the vein, the apex of which is within said Senator Stewart Fraction mining claim as alleged in the complaint and that all mineral that has been
18 removed from said Ontario mining claim has been removed from said vein and that the different ore bodies from which mineral has been extracted in said claim are all contained in and a part of said vein.

3. Admits that after the execution and delivery of the lease mentioned in said cross-complaint the defendant Stanley A. Easton, with the consent of the lessor assigned all his right, title and interest in and to said lease to the Ontario Mining Company and that thereafter the said mining company entered into the possession of the said Ontario lode mining claim and ever since has been and now is in possession and entitled to the possession of same, but denies that the vein having its apex within the Senator Stewart Fraction lode mining claim, as hereinafter alleged and from which ore and mineral *has* been extracted and is now being extracted from beneath the said Ontario mining claim, is a part of said claim, or that the said Ontario Mining Company now has or ever had possession of the same.

4. Admits that this plaintiff claims an estate and interest in a certain vein and the ore therein contained beneath the surface of the Ontario mining claim adverse to the defendant the Ontario Mining Company and the leasehold interest of said company as hereinafter alleged and set forth. Denies, however, that the said claim is false or groundless or that the same is a cloud upon the Ontario Mining Company's right, title or interest in and to said mining claim or to the veins and ores therein contained.
19 5. Alleges that this plaintiff is now, and for a long time hitherto has been, the owner in fee, in possession of, and entitled to the possession of, that certain quartz lode mining claim situated in Yreka Mining District, Shoshone County, Idaho, known and designated the Senator Stewart Fraction lode mining claim, and of all veins, lodes and ledges throughout their entire depth, the tops or apexes of which lie inside of the surface lines of said mining claim extended down vertically, although such veins, lodes or ledges may so far depart from a perpendicular in their course downward as to extend outside of the vertical side lines of the said claim, which said mining claim is particularly described in the United States patent issued therefor as follows:

Beginning at corner No. 1 from which the corner common to Sections one (1), two (2), eleven (11) and twelve (12), of Township forty-eight (48) North, Range two (2) East B. M. bears north eighty-six (86) degrees eleven (11) minutes thirty (30) seconds west, three hundred twenty and thirty-eight hundredths (320.38) feet; thence south twenty four (24) degrees, thirty-eighty (38) minutes west, six hundred (600) feet to corner No. 2; thence north sixty three (63) degrees, fifty five (55) minutes west, thirteen hun-

dred eighty-five and four-tenths (1385.4) feet to corner No. 3; thence north twenty four (24) degrees thirty eight (38) minutes east, five hundred (500) feet to corner No. 4; thence south
20 sixty eight (68) degrees three (3) minutes east, thirteen hundred eighty-six and forty-seven hundredths (1386.47) feet to place of beginning, containing an area of sixteen and one hundred and ninety-six thousands (16.196) acres, more or less.

That within said Senator Stewart Fraction quartz lode mining claim is a certain vein or lode bearing silver, lead and other valuable minerals, the top or apex of which vein or lode crosses the easterly end line of said claim at approximately the center thereof between corners Nos. 1 and 2 and extends within the boundaries of said claim, for a distance of seven hundred five (705) feet, more or less.

That said vein or lode has a downward course and descends into the earth southerly and beyond the south boundary and side line of said claim into and beneath the surface of the Ontario quartz lode mining claim designated as Survey No. 755, and described in the cross complaint herein.

6. Alleges that this plaintiff for many years last past has been, and is now, the owner in fee, in the possession of, and entitled to the possession of, said vein or lode, the top or apex of which is within said Senator Stewart Fraction claim, as aforesaid, between a vertical plane drawn downward through the east end line of said claim, extended southerly in its own direction indefinitely, and a vertical plane drawn downward through a line seven hundred five (705) feet westerly from said east end line, and parallel
21 thereto, extended as aforesaid.

7. Plaintiff further alleges that it is now and for a long time hitherto has been the owner in fee, in the possession of and entitled to the possession of that certain quartz lode mining claim situated in Yreka Mining District, Shoshone County, Idaho, known and designated as the Switchback quartz lode mining claim and of all veins and lodes throughout their entire depth, the tops or apexes of which are inside of the surface line of said mining claim extended down vertically, although such veins, lodes or ledges may so far depart from a perpendicular in their downward course as to extend outside of the vertical side lines of said claim, which said mining claim is particularly described in the United States Patent issued therefor as follows:

Beginning at a point which bears south forty-one (41) degrees, six (6) minutes east three hundred twenty-eight and forty-seven hundredths (328.47) feet from the southwest corner of Section one (1) Township Forty-eight (48) North, Range Two (2) E. B. M., south twenty four (24) degrees, thirty-eight (38) minutes west five hundred forty-three and three tenths (543.3) feet to corner number two (2); thence south sixty-seven (67) degrees forty-six (46) minutes thirty (30) seconds east for six hundred sixty-three and three tenths (663.3) feet to corner number three (3); thence south twenty seven (27) degrees, sixteen (16) minutes west, one

hundred and fifty (150) feet to corner number four (4);
22 thence south fifty eight (58) degrees forty (40) minutes east, two hundred sixteen (216) feet to corner number five (5); thence north twenty four (24) degrees thirty eight (38) minutes east for six hundred three (603) feet to corner number six (6); thence north fifty nine (59) degrees, thirty eight (38) minutes west, eight hundred seventy four and seven tenths (874.7) feet to corner number one (1), the point of beginning.

8. That said Switchback quartz lode mining claim is adjacent to and situated easterly of said Senator Stewart Fraction quartz lode mining claim, and is also adjacent to and situated northerly of said Ontario quartz lode mining claim.

9. That the vein or lode hereinbefore described, the apex of which is within the Senator Stewart Fraction quartz lode mining claim, extends on its strike into said Switchback mining claim and the apex thereof is within the boundaries of said Switchback mining claim and follows an easterly direction along said claim for a considerable distance and said vein has a downward course from said apex in a southerly direction and towards said Ontario mining claim.

That said vein and the apex thereof within said Switchback claim have not been explored or developed sufficiently to determine the extent to which said vein and the apex thereof are within said Switchback claim, or the depth to which said vein extends in its downward course.

23 That said vein, the apex of which is in said Senator Stewart Fraction claim, has not been developed or explored in said Ontario claim beyond the plane drawn downward through the easterly end line of said Senator Stewart Fraction claim extended.

That this plaintiff is the owner in fee, in the possession of and entitled to the possession of that part of said vein or lode the top or apex of which is within said Switchback mining claim between planes drawn downward through the end lines of said claim extended in their own direction indefinitely and if exploration and development of said vein should disclose that the part of said vein, the apex of which is within the Switchback as aforesaid, extends in its downward course to and underneath the said Ontario claim this plaintiff will then assert and claim title to said vein beneath said Ontario claim.

Wherefore, plaintiff demands judgment in accordance with the prayer of its complaint herein.

GUNN, RASCH & HALL,
HAPPY, CULLEN, LEE & HINDMAN,
FEATHERSTONE & FOX,
Attorneys for Plaintiff.

P. O. Address, Featherstone & Fox, Wallace, Idaho.

Duly verified.

Service of copy acknowledged this 6th day of November, 1912.

MYRON A. FOLSOM,
Attorney for Def't.

Filed Jan. 6, 1913.

(Title of Court and Cause.)

Supplemental Complaint.

The plaintiff complains of the defendants and for supplemental complaint alleges:

1. That since the commencement of this action the said defendants have continued to mine, extract and remove ore and mineral from the vein mentioned and described in the complaint herein beneath the Ontario lode mining claim between planes described in paragraph four of the complaint herein, and have converted the same to their own use, the quantity and value of which are unknown to the plaintiff; that said mining operations have been so conducted and carried on that the quantity character and value of the ore and mineral so mined, extracted and removed since the commencement of this action has been largely destroyed and it will be necessary to have a discovery and disclosure by defendants of the quantity and value of such ore and mineral.

Wherefore plaintiff prays judgment that the defendants be held to account to plaintiff for the proceeds of all ore and mineral mined, extracted and removed from the said vein or lode since the commencement of the above action as well as for the ore and mineral mined, extracted and removed prior to the commencement of said action.

Plaintiff prays for judgment in accordance with the prayer of the complaint herein.

TYSON S. DINES,
GUNN, RASH & HALL,
HAPPY, CULLEN, LEE & HINDMAN,
FEATHERSTONE & FOX,
Wallace, Ida.,
Attorneys for Plaintiff.

Duly verified.
Filed Jan. 6, 1913.

(Title of Court and Cause.)

Findings of Fact and Conclusions of Law.

This cause came on for trial before the Court on the 6th day of January, A. D. 1913, at Wallace, Shoshone County, Idaho, the plaintiff being represented by its attorneys, M. S. Gunn, Esq., Tyson S. Dines, Esq., W. E. Cullen, Esq., and Carlton Fox, Esq., and the defendants being represented by their attorneys, Myron A. Folsom, Esq., James E. Gyde, Esq., and John P. Gary, Esq., and evidence

both oral and documentary and in the form of maps, models and drawings, were introduced by both plaintiff and defendants, and both parties having rested and the cause having been fully argued to the Court was submitted to the Court and by the Court taken under advisement; and thereafter the Court, having fully considered both the law and the evidence and being fully advised in the
26 premises, announced that he would find in favor of the defendants and against the plaintiff, and now makes the following findings of fact.

Findings of Fact.

1. That the Stewart Mining Company and the Ontario Mining Company is each a corporation organized under the laws of the State of Idaho.

2. That Jonathan Bourne, Jr., is now and since prior to the year 1892 has been the owner of the Ontario lode mining claim situate in Yreka Mining District, Shoshone County, Idaho; that said claim was duly located as a mining claim on November 1st, 1885, and United States patent was issued to said Bourne in the year 1892. That the description of said claim is as follows:

"Beginning at corner No. 1, whence U. S. M. M. No. 1, bears north 75° 53′ 49″ West 4,981.1 feet; thence North 50° 33′ East 640 feet to Corner No. 2; thence south 67° 46½′ East 733.3 feet to corner No. 3; thence south 50° 33′ West 647 feet to corner No. 4; thence north 67° 19′ West 770 feet to the place of beginning."

That said Bourne during all of the time since prior to the year 1892 until about the month of May, 1911, has been the owner of and in the possession of the Ontario lode mining claim and mine.

3. That on or about May 1st, 1911, the said Bourne for a valuable consideration made, executed and delivered to Stanly A.
27 Easton, his heirs and assigns, a lease of said Ontario mining claim, together with the ores and minerals therein contained, with the right to enter into possession of said mining claim, and take and remove therefrom any and all minerals contained therein or belonging thereto, and that the said lease is still in force. That subsequent to the execution and delivery of said lease above referred to, said Easton, with the consent of said Bourne, assigned for a valuable consideration all his right, title and interest in and to said lease to the Ontario Mining Company, the defendant and cross-complainant herein. That the said Ontario Mining Company thereafter entered into possession of the Ontario lode mining claim, ever since has been and now is in the possession and entitled to the possession of the same.

4. The court further finds that the defendant Easton has not since on or about the month of May, 1911, had any right, title or interest in or to the Ontario mining claim or the lease therein, and that he has not worked or mined the said claim or ores beneath the surface thereof, excepting as an officer and for the benefit of the Ontario Mining Company. That the defendant Myron A. Folsom has never had any right, title or interest in or to said lease, nor has he worked

the said mining claim excepting as an officer and for the benefit of the defendant Ontario Mining Company.

5. That within the Ontario lode mining claim there are
28 certain ore bodies commonly known as the Gray, the May and the Frank ore bodies, which have been and are being mined by the defendant Ontario Mining Company under the lease aforesaid. That the said ore bodies lie beneath the surface of the said Ontario mining claim and extend from the western end line of said claim indefinitely eastward on their downward course.

6. That the plaintiff has no right, title or interest in or to the said ore bodies, or any part thereof, nor has the plaintiff any right, title or interest of, in or to the said Ontario lode mining claim or mine, or of, in or to any ores, or minerals contained therein or beneath the surface thereof.

7. That Jonathan Bourne, Jr., is the owner of the said ore bodies and all of them, and the defendant Ontario Mining Company is entitled under and by virtue of the terms of its lease hereinbefore referred to, to the possession thereof and to work, mine, extract and sell the same.

8. That no part of the apex of the said ore bodies lies within the lines of the Senator Stewart Fraction lode mining claim.

9. That the plaintiff is the owner, in the possession and entitled to the possession of the Senator Stewart Fraction lode mining claim described in the complaint, with the exception of that part thereof in conflict with the Quaker lode mining claim, which conflict is not material to any issue involved in this case.

29 10. That within said Senator Stewart Fraction lode mining claim there is a vein or lode of mineral bearing rock in place which on its onward course crosses the south side line of said Senator Stewart Fraction lode mining claim, and has a course about North 30° East, and the said vein on its onward course does not reach any other line of said claim. That the said vein is cut off on its onward course by a large fault near the north line of said claim, called the Osburn fault in this case. That the said vein on its downward course passes underneath the east line of said claim, which is described in the patent as the end line of said claim, which line connects Corners 1 and 2 of said claim. That the fault which cuts off said vein on its northerly end has a northwestwardly and southeastwardly course and dips southwestwardly. That the end of the vein against said fault has a course North 41° West. That the end of said vein against said fault has a steeply inclined downward course southeasterly.

11. That the end of the vein as the same is terminated on the onward course of the said vein against the fault hereinbefore referred to is the end of the vein on the line of its dip, and the said vein is undercut by the said fault in such manner that if the country below the fault was eroded, it would present the appearance of an overhanging cliff.

12. That the said fault which terminates the said vein upon its onward course is a fault of great magnitude, and for a
30 short distance above the fault has disturbed and broken and slightly deformed the vien, and enclosing rocks in close

proximately to said fault in some places for a greater distance from the fault than in others. That the vein is also at various places cut by other faults which tend in places to flatten the vein somewhat upon its downward course.

13. That the said vein is continuous on its onward course from the line of contact with the said great fault in this case called the Osburn fault southerly to the ore bodies within the Ontario lode mining claim and has been followed upon the level in the drifts by the miners from the said edge of the vein to the ore bodies in the Ontario mining claim.

14. That the top or apex of said vein which on its onward course crosses the south side line of said claim is practically level.

From the foregoing Findings of Fact, the court makes the following

Conclusions of Law.

1. That no part of the apex of the ore bodies in the Ontario mining claim lies within the Senator Stewart Fraction lode mining claim.

2. That the Ontario Mining Company is entitled to the possession of the said ore bodies within the Ontario claim by virtue of its lease aforesaid. That the said Ontario Mining Company has rightfully mined and extracted ore from the said ore bodies.

31 3. That plaintiff has no right, title, interest or estate in or to said ore bodies beneath the said Ontario lode mining claim and is not entitled to an accounting of the proceeds of the ores heretofore extracted and sold by said Ontario Mining Company.

4. That the plaintiff take nothing by its action herein, and the defendant Ontario Mining Company is entitled to a decree against the plaintiff quieting and confirming its leasehold title to said ore bodies and the said Ontario mining claim, and all ores and veins within and beneath the said Ontario mining claim.

5. That the defendants Ontario Mining Company, Easton and Folsom have and recover their costs herein sustained.

Dated at Wallace, Idaho, this 18th day of January, A. D. 1913.

WILLIAM W. WOODS.
District Judge.

Filed Jan. 18, 1913.

(Title of Court and Cause.)

Judgment.

This cause came on for trial before this Court at Wallace Idaho, on the 6th day of January, 1913, the plaintiff being represented by M. S. Gunn, Tyson S. Dines, W. E. Cullen and Carlton Fox, and the defendants being represented by Myron A. Folsom, James E. Gyde and John P. Gray; and oral and documentary evidence and

maps, models and drawings having been introduced, and
32 both parties having rested on the 16th day of January, 1913, and the cause having thereafter been argued and submitted to the court and the court having considered the same, and having submitted and filed its findings of fact and conclusions of law herein,

Now, therefore, it is ordered, adjudged and decreed that the plaintiff take nothing by this action;

It is further ordered, adjudged and decreed that the right, title and interest of the defendant, Ontario Mining Company, of, in and to its lease-hold estate in the said Ontario mining claim and the ores and minerals therein, be and the same hereby is quieted and confirmed in the said Ontario Mining Company against the Stewart Mining Company, and the said plaintiff, Stewart Mining Company, be enjoined forever from asserting any right, title or interest of, in or to the said Ontario mining claim, or the ores or minerals therein, adverse to the defendant, Ontario Mining Company.

It is further ordered, adjudged and decreed that the defendants have and recover their costs herein, taxed at $—.

Dated this 18th day of January, 1913.

WILLIAM W. WOODS, *Judge.*

Filed Jan. 18, 1913.

(Title of Court and Cause.)

Notice of Intention to Move for a New Trial.

33 To John P. Sheehy, Clerk of the above-entitled court; Ontario Mining Company, a corporation; Stanley A. Easton and Myron A. Folsom, defendants above named, and to John P. Gray, Esquire, and Myron A. Folsom, Esquire, attorneys for said defendants:

You, and each of you, will please take notice that it is the intention of the plaintiff, Stewart Mining Company, a corporation, by its attorneys, Tyson S. Dines, Esq., M. S. Gunn, Esq., Messrs. Cullen, Lee & Hindman and Messrs. Featherstone & Fox, to move to vacate the decision and for a new trial in the above entitled action in the above entitled Court for the reason and upon the grounds as follows, to-wit:

1. Because of the insufficiency of the evidence to justify the findings of fact and decision of the Court in the following particulars, to-wit:

(a) The evidence is insufficient to sustain or justify the decision of the Court that plaintiff is not the owner of the vein beneath the Ontario claim containing the ore bodies which have been and are being mined by the defendant, the Ontario Mining Company, but on the contrary it is shown by all of the evidence, and by the pleadings, that the plaintiff is the owner of the Senator Stewart Fraction mining claim; that a United States patent has issued for said mining claim; that the end lines of said claim are parallel; that said claim

was located on a vein extending lengthwise of said claim;
34 that within said claim is a certain vein, referred to in the testimony as the Senator Stewart or Senator Stewart Fraction vein, the top or apex of which crosses the easterly end line of said claim at approximately the center thereof and extends in a westerly direction through said claim to and across the southerly side line at a point 705 feet westerly from the easterly end line, measured along the southerly side line of said claim; that said vein extends in a downward course from said apex to and beneath the Ontario mining claim; that the ore bodies in said Ontario claim which have been, and are being, mined by the Ontario Mining Company are in and a part of said vein, and are situated between a vertical plane drawn downward through the easterly end line of said Senator Stewart Fraction quartz lode mining claim, extended southerly in its own direction, indefinitely, and a vertical plane drawn downward through a line parallel with said easterly end line and situate 705 feet westerly therefrom.

(*b*) The evidence is insufficient to sustain or justify that portion of the fifth finding of fact, reading as follows:

"That within the Ontario mining claim there are certain ore bodies commonly known as the Gray, May and Frank ore bodies, which have been, and are being, mined by the defendant, Ontario Mining Company, under the lease aforesaid."

But on the contrary, according to all of the evidence, said ore bodies are no part of said Ontario lode mining claim, and
35 the said lease referred to did not, and could not, confer upon the Ontario Mining Company any right, title or interest to said ore bodies, or any right to mine the same.

(*c*) The evidence is insufficient to sustain or justify that portion of the fifth finding of fact, reading as follows:

"That the said ore bodies * * * extend from the western end line of said claim indefinitely eastward on their downward course."

But on the contrary, according to all of the evidence in the case, the said ore bodies constitute, and are in fact, but one ore body, and are in, and a portion of, the Senator Stewart or Senator Stewart Fraction vein, the apex of which is within the Senator Stewart Fraction claim, and crosses the easterly end line of said claim at approximately the center thereof, and extends in a westerly direction through said claim to, and across, the southerly side line of said claim, at a point approximately 705 feet westerly from the easterly end line, measured along the southerly side line of said claim, and which vein extends in its downward course from said apex southerly beneath the southerly side line of said claim and to and beneath the Ontario claim, and said ore bodies are within said vein between a vertical plane drawn downward through the easterly end line of said Senator Stewart Fraction claim, extended indefinitely southerly in its own direction, and a vertical plane drawn downward through a line parallel with said easterly end
36 line and 705 feet westerly therefrom, extended as aforesaid; and said ore bodies are a part of the same ore body contained in said vein beneath the surface of the Senator Stewart Frac-

tion claim, which said ore body beneath the Senator Stewart Fraction claim in said vein is continuous to, and identical with, the said ore body in said vein beneath the Ontario claim.

(*d*) The evidence is insufficient to sustain or justify the sixth finding of fact which is in the words and figures following, to-wit:

"That the plaintiff has no right, title or interest in or to the said ore bodies, or any part thereof, nor has the plaintiff any right, title or interest of, in or to the said Ontario lode mining claim or mine, or of, in or to any ores or minerals contained therein or beneath the surface thereof."

But on the contrary, as shown by all of the evidence in this case, the plaintiff is the owner, in possession and entitled to the possession of the Senator Stewart Fraction quartz lode mining claim described in the complaint and answer, which claim was located upon a vein extending easterly and westerly through said claim and crossing the end lines thereof, and the end lines of said claim are parallel, and a United States patent has issued for said claim, and there is within said claim a certain vein known as and referred to in the testimony as the Senator Stewart or Senator Stewart Fraction vein, the
37 apex of which is within the surface boundaries of said claim and crosses the easterly end line thereof in its course or strike at approximately the center of said end line, and extends in its course westerly through said claim to the southerly side line, at a point approximately 705 feet westerly from the easterly end line, measured along the southerly side line of said claim, and said vein having its apex as aforesaid extends southerly in its downward course beneath the southely side line of said claim, and to, and beneath the surface boundaries of the Ontario claim, and said ore bodies, known and referred to as the Gray, the May and the Frank, beneath said Ontario claim are in, and a part of, said vein, having its apex as aforesaid, and are within that part of said vein between a vertical plane drawn downward through the easterly end line of said Senator Stewart Fraction claim, extended in its own direction southerly indefinitely, and a vertical plane drawn downward through a line parallel with said easterly end line, and extended as aforesaid.

(*e*) The evidence is insufficient to sustain or justify the seventh finding of fact which is as follows, to-wit:

"That Jonathan Bourne, Jr., is the owner of the said ore bodies and all of them, and the defendant Ontario Mining Company is entitled under and by virtue of the terms of its lease hereinbefore referred to, to the possession thereof and to work, mine, extract and sell the same."

38 But on the contrary it appears from all of the evidence in the case that the said ore body, or ore bodies, are in, and a part of, the said Senator Stewart or Senator Stewart Fraction vein, having its top or apex within the surface boundaries of the Senator Stewart Fraction claim, and extending in its downward course from said apex to and beneath the Ontario claim, and that said ore bodies are within that section of the vein having its apex within the surface boundaries of said Senator Stewart Fraction claim as hereinbefore described and between a vertical plane drawn downward through

the easterly end line of said claim, extended in its own direction southerly indefinitely, and a vertical plane drawn downward through a line parallel with said easterly end line and 705 feet westerly therefrom, extended as aforesaid.

(*f*) The evidence is insufficient to sustain or justify the eighth finding of fact reading as follows, to-wit:

"That no part of the apex of the said ore bodies lies within the lines of the Senator Stewart Fraction lode mining claim."

But on the contrary, as shown by all the evidence in the case, the said ore bodies are not within any vein having its apex within the surface boundaries of the Ontario claim, but are within, and a part of, a vein, the apex of which is within the surface boundaries of the Senator Stewart Fraction claim, and extends in its course or
39 strike across the easterly end line of said claim, at approximately the center thereof, and through said claim in a westerly direction to and across the southerly side line of said claim at a point approximiately 705 feet westerly from the east end line, measured along the southerly side line of said claim, which vein extends in its downward course southerly to and beneath the Ontario claim, said ore bodies being within that section of said vein situate between a vertical plane drawn downward through the easterly end line of said claim, extended in its own direction southerly indefinitely, and a vertical plane drawn downward through a line 705 feet westerly and parallel with said easterly end line, extended as aforesaid, and which ore bodies are on a lower plane than the plane of said apex and are on a downward course from said apex along any line parallel with said easterly end line of said Senator Stewart Fraction claim.

(*g*) The evidence is insufficient to sustain or justify so much of the tenth finding of fact as is in the words following, to-wit:

"That within said Senator Stewart Fraction lode mining claim there is a vein or lode of mineral bearing rock in place which on its onward course crosses the south side line of said Senator Stewart Fraction lode mining claim, and has a course about North 30° East, and the said vein on its onward course does not reach any other line of said claim."

But on the contrary, according to all of the evidence in
40 the case, the vein in the Senator Stewart Fraction lode mining claim, mentioned in said finding, on its onward course or strike crosses the easterly end line of said claim at approximately the center thereof, and extends through said claim on its strike or onward course in a westerly direction to and across the southerly side line of said claim at a point 705 feet westerly from the easterly end line, measured along the southerly side line of said claim.

(*h*) The evidence is insufficient to sustain or justify that part of the tenth finding of fact in the words following, towit:

"That the said vein is cut off on its onward course by a large fault near the north line of said claim, called the Osburn fault in this case."

But on the contrary, it is shown by all of the evidence in the case, that the terminal edge of said vein adjacent to, and along said

fault, is the apex of said vein, and that said vein had a downward course from said apex along said fault between the planes hereinbefore described, to the ore bodies and that section of the vein embracing said ore bodies beneath the Ontario plane, and said vein is not terminated against said Osburn fault on its onward course, but on its course or strike is parallel to said Osburn fault.

(*i*) The evidence is insufficient to sustain or justify that portion of the tenth finding of fact, reading as follows, to-wit:

41 "That the said vein on its downward course passes beneath the east end line of said claim, which is described in the patent as the end line of said claim, which line connects corners one and two of said claim."

But on the contrary, as shown by all of the evidence, the apex of said vein crosses the east end line of said claim and the said vein extends on its course or strike across said end line, and on its downward course or dip beneath the southerly side line of said claim and to and beneath the Ontario claim between the planes hereinbefore described.

(*j*) The evidence is insufficient to sustain or justify that portion of the tenth finding of fact reading as follows:

"That the fault which cuts off said vein on its northerly end has a northwestwardly and southeastwardly course and dips southwestwardly. That the end of the vein against said fault has a course of north 41° west. That the end of said vein against said fault has a steeply inclined downward course southeasterly."

But on the contrary, the evidence is undisputed that the terminal edge of said vein along and adjacent to said fault is the apex thereof, and said vein from said apex has a steeply inclined downward course from said apex for a distance of approximately 200 feet, where the vein flattens, but continues to have a pronounced downward course on lines parallel with said east end line of said claim into and through that section of said vein beneath the Ontario, within which are the ore bodies in controversy, and between the vertical planes hereinbefore described.

42 (*k*) The evidence is insufficient to sustain or justify that part of the eleventh finding of fact, reading as follows:

"Said vein is undercut by the said fault in such a manner that if the country below the fault was eroded it would present the appearance of an overhanging cliff."

But on the contrary, according to all the evidence, the said fault has a much steeper dip or downward course than said vein and said vein departs from said fault in its downward course a short distance from the terminal edge along said fault, and if the country above the terminal edge of said fault should be eroded so that the terminal edge of said vein would constitute an outcrop, there would be presented the apex of a vein upon which any miner would make, and would be justified in making, a location, laying his claim lengthwise along said terminal edge.

(*l*) The evidence is insufficient to sustain or justify that portion of the twelfth finding of fact which is in the words following, to-wit:

"That the said fault which terminates the said vein upon its

onward course is a fault of great magnitude, and for a short distance above the fault has disturbed and broken and slightly deformed the vein, and enclosing rocks in close proximity to said fault in some places for a greater distance from the fault than in others."

But on the contrary the evidence wholly fails to show that
43 the said fault terminates the said vein upon its onward course but conclusively shows that the said vein is terminated by or upon said fault on its course upward and such termination constitutes and is in fact the top or apex of said vein, and the evidence wholly fails to show that the said fault has disturbed or broken said vein and the enclosing rocks in close proximity thereto, or elsewhere, but on the contrary the evidence conclusively shows that said vein is in place and is unbroken and undisturbed, and continues both on its strike and dip from the termination thereof along said fault.

(*m*) The evidence is insufficient to sustain or justify that portion of the twelfth finding of fact, reading as follows:

"That the vein is also at various places cut by other faults which tend in places to flatten the vein somewhat upon its downward course."

But on the contrary the evidence shows that while the said vein is at various places disturbed by faults, such disturbances are local and do not in any manner affect or destroy the identity or continuity of the said vein from its said apex downward to and beneath the said Ontario claim, and do not flatten said vein except locally and for short distances.

(*n*) The evidence is insufficient to sustain or justify the thirteenth finding of fact which is in the words and figures following, to-wit:

44 "That the said vein is continuous on its onward course from the line of contact with the said great fault in this case called the Osburn fault southerly to the ore bodies within the Ontario lode mining claim and has been followed upon the level in the drifts by the miners from the said edge of the vein to the ore bodies in the Ontario lode mining claim."

But on the contrary, according to all the evidence, the ore in said vein can be traced and followed, from the upper terminal edge along the said Osburn fault, to the ore bodies beneath the Ontario continuously, and in following said vein and ore along planes parallel to vertical planes drawn downward through the end line of said claim, extended indefinitely in their own direction southerly, the course is a downward course for the entire distance, and the differences in elevation between the apex or terminal edge along said fault, and the ore bodies, or section of the vein beneath the Ontario on any vertical plane parallel with a vertical plane of the end line is several hundred feet.

(*o*) The evidence is insufficient to sustain or justify the fourteenth finding of fact which is in the words following, to-wit:

"That the top or apex of said vein which on its onward course crosses the south side line of said claim is practically level."

But on the contrary, according to all of the evidence, the
45 said terminal edge or apex of said vein from the point where it comes in contact with the said Osburn fault has an inclina-

tion downward towards the easterly end line of said claim of approximately 30°, by reason of which the apex as it crosses said end line is lower than the said apex where it first comes in contact with said Osburn fault.

(*p*) There is no evidence to sustain or justify the finding that the defendant, the Ontario Mining Company, is entitled, as lessee, to the possession of the ore bodies beneath the Ontario claim, and to mine, extract and sell the same. But on the contrary, according to all the evidence, the plaintiff, by virtue of its ownership of the Senator Stewart Fraction claim, and the extralateral right to all veins having their tops or apices within the said claim, is the owner and entitled to the possession of the ore bodies beneath the Ontario, and to that section of the Senator Stewart vein having its apex within the said Senator Stewart Fraction claim and extending in its downward course from such apex to and beneath the Ontario between the vertical planes hereinbefore described containing said ore bodies.

(*q*) There is no evidence to sustain or justify what is designated as conclusion of law No. 1, reading as follows:

"That no part of the apex of the ore bodies in the Ontario mining claim lies within the Senator Stewart Fraction lode mining claim."

46 But on the contrary, according to all of the evidence, the ore bodies mentioned in said conclusion are in, and a part of, a vein having its apex within the surface boundaries of the Senator Stewart Fraction lode claim, as hereinbefore described, and which vein extends in its downward course from said apex to and beneath the Ontario claim between the vertical planes hereinbefore described.

(*r*) There is no evidence to sustain or justify that part of conclusion of law No. 2, reading as follows:

"That the Ontario Mining Company is entitled to the possession of the said ore bodies within the Ontario claim by virtue of its lease aforesaid."

On the contrary, the evidence conclusively shows that the said ore bodies are no part of the said Ontario claim, but are in, and a part of, a vein having its apex within the Senator Stewart Fraction claim, as hereinbefore described.

(*s*) The evidence is insufficient to sustain or justify that part of conclusion of law No. 2, reading as follows:

"That the said Ontario Mining Company has rightfully mined and extracted ore from the said ore bodies."

But on the contrary, according to all of the evidence in the case, said ore bodies are no part of said Ontario mining claim, but are a part of a vein having its apex within the Senator Stewart Fraction claim, and extending in a downward course from said apex

47 to and beneath said Ontario claim, as hereinbefore set forth.

(*t*) The evidence is insufficient to sustain or justify conclusion of law No. 3, reading as follows:

"That plaintiff has no right, title, interest or estate in or to said ore bodies beneath the said Ontario lode mining claim and is not entitled to an accounting of the proceeds of the ores heretofore extracted and sold by said Ontario Mining Company."

Because, according to all of the evidence, the plaintiff is the owner, in possession, and entitled to the possession of the ore bodies beneath the Ontario mining claim from which ore has been, and is being, extracted by the Ontario Mining Company by virtue of the ownership by plaintiff of the said Senator Stewart Fraction claim, and by virtue of the existence of a vein in said claim having its apex, as hereinbefore described, and extending in a downward course to and beneath said Ontario mining claim, between the vertical planes hereinbefore mentioned.

(*a*) There is no evidence to sustain or justify the decision of the Court that the edge of the vein along the Osburn fault in the Senator Stewart Fraction claim is not the apex of said vein; to the contrary, according to all of the evidence in the case, the said edge of the vein along the Osburn fault and which runs in a northwesterly and southeasterly direction is the topmost edge of the said
48 vein and constitutes and is in fact and in law the top or apex of said vein.

2. Because of the errors of law occurring at the trial and excepted to by plaintiff as follows:

(*a*) The Court erred in making conclusion of law No. 1.

(*b*) The Court erred in making conclusion of law No. 2.

(*c*) The Court erred in making conclusion of law No. 3.

(*d*) The Court erred in making conclusion of law No. 4.

(*e*) The Court erred in making conclusion of law No. 5.

(*f*) The Court erred in rendering judgment in favor of the defendants.

(*g*) The Court erred in deciding that the edge of the vein along the Osburn fault in the Senator Stewart Fraction claim is not the apex of the said vein within the meaning of the term apex as used in section 2322 of the Revised Statutes of the United States.

(*h*) The Court erred in refusing to grant the plaintiff the injunctive relief prayed for in plaintiff's complaint.

(*i*) The Court erred in refusing to grant the plaintiff an accounting against the defendants.

(*j*) Because the said decision of the Court is against law.

The said motion will be made upon the records and files in this action and upon the minutes of the Court and at such hearing reference will be had to the phonographic record of the testimony including exhibits introduced in evidence and on file in said action.

TYSON S. DINES,
GUNN, RASH & HALL,
CULLEN, LEE & HINDMAN,
FEATHERSTONE & FOX,
Attorneys for Plaintiff.

49 Service of the within Notice of Intention to Move for a New Trial is hereby accepted and the receipt of a true and correct copy thereof acknowledged, at Wallace, Idaho, this 27 day of Jan., 1913.

J. E. GYDE,
Attorney for Defendant.

Filed Jan. 27, 1913.

(Title of Court and Cause.)

Bill of Exceptions.

Be it remembered, that at the conclusion of all of the testimony in the above entitled action adduced at the trial thereof, and before the rendition of the decision of this Court in said action and before the making and filing of the Findings of Fact and Conclusions of Law and judgment thereon by this Court on to-wit, the 17th day of January, A. D. 1913, the plaintiff, Stewart Mining Company, presented to the above entitled Court in writing and requested the said Court to make the following finding of fact, to-wit:

"(1) That the plaintiff, a corporation organized and existing under and by virtue of the laws of the State of Idaho, is the owner in possession and entitled to the possession of the Senator Stewart Fraction quartz lode mining claim described in the complaint with the exception of that part thereof in conflict with the Quaker quartz lode mining claim which conflict is not material to any issue involved in this case and is westerly of the 705 ft. plane mentioned in the complaint."

50 Plaintiff's said request was denied by the Court to which said ruling of the Court the plaintiff, by counsel, then and there excepted for the reason that the evidence fully justified and demanded such finding which said exception was allowed by the Court and which ruling of the Court the plaintiff now assigns as error.

Be it further remembered, that at said time and place the plaintiff presented to the said Court in writing and requested the said Court to make the following finding of fact, to wit:

"(2) That the lines of the said Senator Stewart Fraction claim between corners one and two and three and four are the end lines of the said claim and are parallel."

Which said request was denied by the Court to which said ruling of the Court the plaintiff, by counsel, then and there objected and excepted for the reason that the evidence fully justified and demanded such finding, which said exception was allowed by the Court and which said ruling of the Court the plaintiff now assigns as error.

And be it further remembered, that at said time and place the plaintiff presented to the Court in writing and requested the Court to make the following finding of fact, to-wit:

"(3) That within said Senator Stewart Fraction quartz lode mining claim is a certain vein, the apex of which, as the term apex is used in Section 2223 of the Revised Statutes of the United States, crosses the easterly end line of said claim between

51 corners one and two at approximately the center there of and extends in a westerly direction through said claim to the south side line thereof at a point 705 feet westerly of corner No. 2 measured along said south side line at which point said apex passes without said claim and into the Senator Stewart quartz lode mining claim."

Which said request was denied by the Court to which said ruling of the Court the plaintiff, by counsel, then and there duly objected and excepted for the reason that the evidence in the case fully sustains, justifies and demands such finding of fact, which said exception was allowed by the Court and which said ruling of the Court the plaintiff now assigns as error.

And be it further remembered, that at said time and place the plaintiff presented to the Court in writing and requested the Court to make the following finding of fact, to-wit:

"(4) That said vein has a downward course from its apex and extends in such downward course beneath the south side line of said Senator Stewart Fraction claim and to and beneath the surface of the Ontario claim."

Which said request was denied by the Court to which said ruling of the Court the plaintiff, by counsel, then and there objected and excepted for the reason that the evidence adduced at the trial of the case fully warranted and justified and demanded such finding of fact which said exception was allowed by the Court and
52 which said ruling of the Court the plaintiff now assigns as error.

And be it further remembered, that at said time and place the plaintiff presented to the Court in writing and requested the Court to make the following finding of fact, to-wit:

"(5) That the defendant, Ontario Mining Company, a corporation organized and existing under and by virtue of the laws of the State of Idaho, entered upon that part of said vein beneath the surface of the Ontario claim between a vertical plane drawn downward through the easterly end line of said Senator Stewart Fraction claim extended and a vertical plane drawn downward through a line parallel to said easterly end line extended and 705 feet westerly therefrom and has extracted and removed and converted to its own use a large quantity of valuable ore in excess of forty thousand tons and of the value of several hundred thousand dollars and is now engaged in the extraction and conversion of ore from said vein between said planes."

Which said request was denied by the Court to which said ruling of the Court the plaintiff, by counsel, then and there objected and excepted for the reason that the evidence in the case fully justifies, warrants and demands such finding of fact, which exception was duly allowed by the Court and which said ruling of the Court the plaintiff now assigns as error.

And be it further remembered, that at said time and place the plaintiff, by counsel, presented to the Court in writing and
53 requested the Court to make the following conclusion of law, to-wit:

"(1) That the plaintiff is entitled to an injunction enjoining and restraining the defendant, Ontario Mining Company, its officers, agents, servants and employès and each and all of them, from entering upon and from mining and extracting ore from that part of the said vein having its apex within the surface boundaries of the Senator Stewart Fraction lode mining claim and extending southerly in a downward course to and beneath the Ontario mining claim between

vertical planes drawn downward through the easterly end line of said Senator Stewart Fraction claim extended and a line parallel thereto 705 feet westerly therefrom."

Which said request was denied by the Court to which said ruling of the Court the plaintiff, by counsel, then and there duly objected and excepted for the reason that the findings of fact presented to the Court in writing by the plaintiff and requested by the plaintiff fully warranted, justified and demanded the making of said conclusion of law, which said exception was allowed by the Court and which said ruling of the Court the plaintiff now assigns as error.

And be it further remembered, that at said time and place the plaintiff presented to the Court in writing and requested the Court to make the following conclusion of law, to-wit:

54 "(2) That the plaintiff is entitled to an accounting for the ore extracted and to a judgment for the amount found due the plaintiff upon such accounting."

Which said request was denied by the Court to which said ruling of the Court the plaintiff, by counsel, then and there duly objected and excepted for the reason that the findings of fact presented to the Court in writing by the plaintiff and requested by the plaintiff fully warranted, justified and demanded the making of said conclusion of law, which said exception was allowed by the Court and which said ruling of the Court the plaintiff now assigns as error.

And be it further remembered, that thereafter and on to-wit, the 18th day of January, A. D. 1913, the Judge of said Court made and rendered his decision at the trial of said action against the plaintiff and in favor of the defendants in the words following, to-wit:

"In this case of the Stewart Mining Company against the Ontario, I have paid very close attention during the trial, and very considerable thought and investigation since. I have determined in favor of the defendant in this action. There may be some little dispute about the apex of that vein, but there is no question in my mind as to its course, and there is no question in my mind as to the law of the case. I have a settled conviction, which it would take a decision of the Supreme Court of the United States to remove, that when a vein crosses the side line on its course, that that

55 side line becomes an issue, and that it is the end line of that claim where it crosses, whether it crosses both end lines or not, and it is upon that ground chiefly that I award the decision to the defendants."

To which said decision the plaintiff, by counsel, then and there objected and excepted for the reason that such decision was not warranted by the facts in this case, it appearing from the evidence that there was a vein of mineral bearing rock *in* and ore in place within the Senator Stewart Fraction lode mining claim whose top or apex was within the said Senator Stewart Fraction lode mining claim and extended from a point approximately the center of the east end line of said claim in a westerly direction to a point where it crossed the south side line of the said claim which said last mentioned point was distant approximately 705 feet from the east end line of said claim measured along the south side line thereof and

that the ore bodies in controversy in this action beneath the Ontario lode mining claim, to-wit, the May, the Gray and the Frank ore bodies are a part of that portion of the Senator Stewart vein hereinbefore described lying between a vertical plane drawn downward through the east end line of said Senator Stewart Fraction claim and extended southerly in its own direction indefinitely and a vertical plane drawn downward and parallel to the last mentioned plane and extended southerly in its own direction indefinitely situated approximately 705 feet westerly of the east end line
56 of said claim, the said ore bodies in the said Ontario lode mining claim being so situate as to be upon a downward course on said vein from the top or apex thereof as described as being within the surface boundaries of the said Senator Stewart Fraction claim along any line or lines within said claim drawn parallel to the east end line thereof; and said decision is not warranted in law for the reason that where a vein and the top or apex thereof crosses an end line and on its course through the claim passes out of the side line, the side line does not become the end line for the purpose of determining the extralateral rights to the said vein or for any other purpose whatsoever, but the end lines as they are located and described in the patent remain the end lines and the extralateral rights to such vein are in the direction of the downward course of the said vein parallel to the end lines and within a vertical plane drawn downward through the end line through which the vein passes as such plane is extended in its own direction indefinitely in the direction of the downward course of the said vein, and a vertical plane parallel to the said last mentioned end line drawn downward through a point where the said vein on its course through the said claim passes out of the said claim through the side line thereof extended indefinitely as aforesaid; which said exception was duly allowed by the Court and which said ruling of the Court the plaintiff now assigns as error.

57 And be it further remembered, that thereafter and on to-wit, the said 18th day of January, A. D. 1913, the Court made its findings of fact and conclusions of law on file herein and rendered his judgment thereon on file herein.

And now within the time allowed by law and by the order of this Honorable Court granting the plaintiff thirty days from and after the date of the rendition of the judgment, to-wit, the 18th day of January, 1913, within which to present its bill of exceptions, comes the plaintiff, the Stewart Mining Company, by its counsel, and makes, files and presents this as and for its bill of exceptions to the refusal of the Court to make the findings of fact and conclusions of law requested by the plaintiff and to the decision of the Court and prays that the same may be allowed, settled, signed and sealed as such bill of exceptions thereto.

Dated at Wallace, Idaho, this 1st day of February, A. D. 1913.

TYSON S. DINES
GUNN, RASH & HALL,
CULLEN, LEE & HINDMAN,
FEATHERSTONE & FOX,
Attorneys for Plaintiff.

Within the time allowed by the order of this court the above named plaintiff having presented the foregoing as a full, true and correct bill of exceptions to the refusal of this Court to make the findings of fact and conclusions of law proposed by the
58 plaintiff and to the decision of this Court and it satisfactorily appearing to this Court that the same is a full, true and correct bill of exceptions respecting said ruling and decision,

It is, therefore, ordered that the foregoing be, and the same hereby is signed, sealed, settled and allowed as such full, true and correct bill of exceptions, and that the same be made a record in this action.

The Court in signing the same objects to such argument as is therein contained, as not proper in a bill of exceptions and a superfluity which should not be encouraged in practice.

Done at Chambers at Wallace, Idaho, this 1st day of February, A. D. 1913.

WILLIAM W. WOODS,
District Judge.

Filed Feb. 1, 1913.

(Title of Court and Cause.)

Order Denying Motion for a New Trial.

The motion of the plaintiff, Stewart Mining Company, for a new trial of the above entitled action came on regularly for hearing before the Judge of the above entitled Court at Chambers this fourth day of February, A. D. 1913, the plaintiff appearing by its attorneys Tyson S. Dines, Esquire, Messrs. Gunn, Rasch & Hall, Messrs. Cullen, Lee & Hindman and Messrs. Featherstone & Fox, and the defendants appearing by their attorneys, John P.
59 Gray, Esquire, Myron A. Folsom, Esquire and James E. Gyde, Esquire, and after argument by attorneys for the plaintiff and for the defendants, the matter was by the Court considered, and after consideration, it is hereby

Ordered that the said motion of the plaintiff for a new trial in the above entitled action be, and the same is hereby denied.

Dated at Chambers at Wallace, Idaho, this fourth day of February, A. D. 1913.

WILLIAM W. WOODS, *Judge.*

Filed Feb. 4, 1913.

(Title of Court and Cause.)

Certificate.

It is hereby certified that the following papers, to-wit: the complaint in said action, the answer and cross-complaint of the defendants, answer to cross-complaint, supplemental complaint, findings of fact and conclusions of law, judgment, notice of intention to move for a new trial and bill of exceptions relating to the refusal of

this court to make the findings of fact and conclusions of law requested by the plaintiff and all exhibits in said action, all of which are of the records and files in this case, were submitted to the undersigned Judge and by him used and considered on the hearing of the motion for a new trial, together also with the reporters' transcript of the evidence taken at the trial and on file herein.

60 Dated at Wallace, Idaho, this fourth day of February, A. D. 1913.

WILLIAM W. WOODS, *Judge.*

Filed Feb. 4, 1913.

(Title of Court and Cause.)

Notice of Appeal.

To John P. Sheehy, Clerk of the District Court of the First Judicial District of the State of Idaho in and for the County of Shoshone; Ontario Mining Company, a corporation; Stanly A. Easton and Myron A. Folsom, Defendants in the above entitled action; John P. Gray, Esquire, Myron A. Folsom, Esquire, and James E. Gyde, Esquire, Attorneys for said Defendants:

You, and each of you, are hereby notified that the above named plaintiff, Stewart Mining Company, hereby appeals to the Supreme Court of the State of Idaho from the judgment entered in favor of the defendants and against the plaintiff in said District Court of the First Judicial District of the State of Idaho, in and for the County of Shoshone, on the 18th day of January, A. D. 1913, wherein and by said judgment it was ordered, adjudged and decreed that the right, title and interest of the defendant, Ontario Mining Company, of, in and to its leasehold estate in the said Ontario mining claim and ores and minerals therein be, and the same were thereby quieted and confirmed in the said Ontario Mining Company against the

61 said Stewart Mining Company and that the plaintiff, Stewart Mining Company, be enjoined forever from asserting any right, title or interest of, in or to the said Ontario Mining claim or the ores or minerals therein adverse to the defendant, Ontario Mining Company, and in and by which said judgment it was further ordered, adjudged and decreed that the defendants have and recover their costs in said action taxed therein at Three hundred seventy-five 65/100 Dollars.

This appeal is taken on both questions of law and fact.

And you, and each of you, are hereby further notified that the above named plaintiff, Stewart Mining Company, hereby further appeals to the Supreme Court of the State of Idaho from an order made by the Judge of the above entitled Court and entered herein on the fourth day of February, A. D. 1913, which said order denied the motion of the said plaintiff made in said action on the fourth day of February, A. D. 1913, for a new trial of the said action, which said order was in favor of the defendants and against the plaintiff.

This appeal is taken on both questions of law and questions of fact.

Dated at Wallace, Idaho, this 14th day of February, A. D. 1913.

TYSON S. DINES,
GUNN, RASH & HALL,
CULLEN, LEE & HINDMAN,
FEATHERSTONE & FOX,
Attorneys for Plaintiff.

62 Service of the foregoing and annexed notice of appeal accepted, and the receipt of a true and correct copy thereof acknowledged, at Wallace, Idaho, this 15 day of February, A. D. 1913.

MYRON A. FOLSOM,
JOHN P. GRAY,
J. E. GYDE,
Attorneys for Defendants.

Filed Feb. 15, 1913.

(Title of Court and Cause.)

Undertaking on Appeal.

Whereas, Stewart Mining Company, a corporation, the plaintiff in the above entitled action, has appealed or is about to appeal to the Supreme Court of the State of Idaho, from a judgment made and entered against it in the above entitled action in the District Court of the First Judicial District of the State of Idaho, in and for the County of Shoshone, which said judgment was in favor of the defendants, Ontario Mining Company, a corporation, Stanly A. Easton and Myron A. Folsom, and against the plaintiff, Stewart Mining Company, a corporation, on the 18th day of January, A. D. 1913, wherein and whereby it was ordered adjudged and decreed that the right, title and interest of the defendant, Ontario Mining Company, of, in and to its leasehold estate in the said Ontario mining claim and the ores and minerals therein be, and the same thereby were quieted and confirmed in the said Ontario Min-
63 ing Company against the Stewart Mining Company and that the said plaintiff, Stewart Mining Company be enjoined forever from asserting any right, title or interest in or to the said Ontario mining claim or the ores or minerals therein adverse to the defendant, Ontario Mining Company, and wherein and whereby it was further ordered, adjudged and decreed that the defendants have and recover their costs in this action taxed at Three hundred seventy five 65/100 Dollars; and the said plaintiff, Stewart Mining Company, has further appealed or is about to appeal from the order made by the Judge in the above entitled action on the fourth day of February, A. D. 1913, denying the plaintiff's motion for a new trial of the said action.

Now, therefore, in consideration of the premises and of such appeal or appeals, the undersigned, National Surety Company, does

hereby undertake and promise on the part of the said plaintiff and appellant, Stewart Mining Company, that the said plaintiff and appellant will pay all damages and costs which may be awarded against it on this appeal or appeals, or on the dismissal of this appeal or appeals, not exceeding the sum of Three hundred dollars ($300.00) to which amount it acknowledges itself bound.

In witness whereof, the said National Surety Company, the surety named in the foregoing undertaking, has hereunto caused its name to be subscribed by its duly appointed attorneys in fact in
64 that behalf duly authorized this 15th day of February, A. D. 1913.

NATIONAL SURETY CO.,
By A. L. NICHOLSON AND
JAMES A. WAYNE,
Its Attorney in Fact.

STATE OF IDAHO,
County of Shoshone, ss:

A. L. Nicholson and James A. Wayne being first duly sworn, each for himself, on oath deposes and says that he is, jointly with the other, the duly appointed, qualified and acting attorney in fact of the National Surety Company, the surety named in the foregoing undertaking, and as such attorney in fact is authorized, jointly with the other, to execute surety bonds on behalf of the said National Surety Company in the State of Idaho, and that the said National Surety Company has complied with all of the laws of the State of Idaho relating to such corporations and is authorized to execute surety bonds in the State of Idaho and to do business in the State of Idaho as is evidenced by the certificate now on file in the office of the County Recorder of Shoshone County, State of Idaho.

A. L. NICHOLSON.
JAMES A. WAYNE.

Duly verified.
Filed Feb. 15, 1913.

(Title of Court and Cause.)

Order Re Exhibits.

Sufficient cause appearing therefor, it is ordered that the
65 Clerk of this Court be, and he hereby is, directed to transmit with the transcript in the above entitled action to the Clerk of the Supreme Court of the State of Idaho, all exhibits introduced and used upon the hearing of said cause in this Court, to be used by the Supreme Court of this State upon the hearing to be had in said Court on appeal from the judgment in said action and from the order overruling plaintiff's motion for a new trial herein, which said appeal has heretofore been perfected herein.

Dated at Wallace, Idaho, this 14th day of February, A. D. 1913.

WILLIAM W. WOODS,
District Judge.

Filed Feb. 15, 1913.

66 STATE OF IDAHO,
County of Shoshone, ss:

I, John P. Sheehy, Clerk of the District Court of the First Judicial District of the State of Idaho, in and for the County of Shoshone, do hereby certify the foregoing to be a full, true and correct transcript (under the provisions of Section 4820-A Rev. Codes, of chapter 117 of the 1911 Session Laws) of the Complainant, Answer and Cross-Complaint, Answer to Cross-Complaint, Supplemental Complaint, Findings of Facts and Conclusions of Law, Judgment, Notice of Intention to move for a New Trial, Order Overruling Motion for a New Trial, Certificate of Papers used on Hearing of Motion for a New Trial, Bill of Exceptions, Notice of Appeal, Undertaking on Appeal, Stipulation and Order Re. Exhibits; in the case of Stewart Mining Company vs. Ontario Mining Company, Stanly A. Easton and Myron A. Folsom, all of which papers are now on file in my office in the above entitled action.

In witness whereof, I have hereunto set my hand and affixed the Seal of said Court this 20th day of February, A. D. 1913.

[Seal District Court, First Judicial District, Shoshone County, State of Idaho.]

JOHN P. SHEEHY,
Clerk District Court.

67 In the District Court of the First Judicial District of the State of Idaho, in and for the County of Shoshone.

No. 3235.

STEWART MINING COMPANY, a Corporation, Plaintiff,
vs.
ONTARIO MINING COMPANY, a Corporation, STANLY A. EASTON and MYRON A. FOLSOM, Defendants.

Before: Hon. W. W. Woods, Presiding Judge.

Appearances:

For the Plaintiff:

Tyson S. Dines, Esq.,
M. S. Gunn, Esq.,
W. E. Cullen, Esq.
Messrs. Featherstone & Fox.

For the Defendants:

Myron A. Folsom, Esq.,
John P. Gray, Esq.
J. E. Gyde, Esq.

Reporter's Transcript.

Be it remembered, that the above entitled case came on regularly for trial in the above entitled court on Monday, January 6th,
68 1913, at 10:00 o'clock a. m., before Hon. W. W. Woods, Presiding Judge, the plaintiff being represented by its counsel,

Tyson S. Dines, Esq., M. S. Gunn, Esq., W. E. Cullen, Esq., and Messrs. Featherstone & Fox, and the Defendants being represented by their counsel, Myron A. Folsom, Esq., John P. Gray, Esq., and J. E. Gyde, Esq.; whereupon the following proceedings were had:

69 MONDAY, *January 6th*, 1913.

Mr. GUNN: May it please the court, we desire permission to file a supplemental complaint, alleging the continued extraction of ore after the commencement of this action, and praying for an accounting down to the date of the trial. I have handed Mr. Folsom a copy of the supplemental complaint, and it is my understanding that there is no objection.

Mr. FOLSOM: There is no objection.

The COURT: I consider it very proper.

Mr. FOLSOM: We simply desire to be understood as denying, as we did in our original answer, that Mr. Easton and I are mining, but we admit that the Ortario has been mining since. It will not be necessary for us to file a formal answer to that, I suppose.

Mr. GUNN: Oh, no.

The COURT: The court will file this supplemental complaint.

Mr. GUNN: May it please the court, we desire to make a request at this time which we have no doubt counsel for the defendant will join in, and that is, that at the conclusion of the testimony
70 your honor will visit this property, and if that is understood, that you will visit the property, it might make some difference in the introduction of testimony. It may not be necessary to refer in detail to some matters that we would otherwise feel called upon to explain more fully, if it is understood that your honor will visit the property.

Mr. FOLSOM: We have not the slightest objection. Your honor can consult your own wishes, but we would be very glad to have you do it.

The COURT: I can promise to go to the property, but I cannot promise to climb ladders or anything of that kind. I have been the subject or the victim of inflammatory rh-umatism, so that my feet are almost crippled and I cannot stand any ladder work, even to the amount of a hundred feet.

Mr. GUNN: The workings that it will be important for your honor to visit are open and can be easily reached, and I think we can arrange it so that there will be no necessity for climbing.

The COURT: I have been through a great many mines in my life, but I am not able physically at this time to make a mine examination, and I want you to understand me clearly in that
71 regard.

Mr. GUNN: Yes, sir. There is one other matter that perhaps it would be well to call attention to at this time. We have agreed that the number of witnesses on each side shall be limited to ten.

Mr. FOLSOM: That is correct your honor. Very well.

Mr. CULLEN: We have also agreed, if the court please, that the stenographers, Mr. Macdougall and Mr. Deavitt, may be sworn in

as official reporters, and that their transcript of the testimony may be taken as official.

The COURT: Without any charge to the State?

Mr. CULLEN: Yes, without any charge to the State, and also without any bond.

The COURT: Very well. I will appoint these gentlemen as deputy reporters and will swear them in. I believe Mr. Deavitt has already been appointed a deputy reporter and has been sworn in.

G. H. Macdougall sworn in as a deputy court reporter.

Mr. GUNN: The complaint in this case alleges title and ownership of the Senator Stewart fraction claim in the plaintiff, and gives a description of the claim in the complaint. In the answer
72 the allegation with reference to title and ownership and the description are admitted, but there is an exception pleaded, and I believe that counsel for the defendant are willing to stipulate that the exception in the patent does not effect the property in controversy in this action, and the exception is not material to any issue in the case.

Mr. FOLSOM: That was not the understanding. The understanding was that we would stipulate that it was not necessary to offer any proof of title, but that it would be admitted that the exception as pleaded in the answer was taken from the patent and should have been incorporated in your description in order to make it complete. I will state that we do not make any contention and do not expect to make any contention that it is of any importance, other than as to the fact of accuracy.

Mr. GUNN: Do I understand that you make no contention that the part excepted from the patent has any effect whatever upon this case?

Mr. FOLSOM: As far as I know it does not, but I simply pleaded that as a matter of correcting your description. We did not desire to admit an erroneous description, because it may at some
73 time become material in some other proceeding, but as far as I know it does not effect the result in this particular case.

Mr. GUNN: We admit that the exception was made, and it was our understanding that it would be stipulated that the part excepted had no materiality as far as the issues are concerned in this case, an ddoes not effect the property.

Mr. FOLSOM: Down in the southwest corner of the Stewart Fraction your honor will see a line marked across there, and it is called The Quaker. That piece of ground was excepted when the Stewart Fraction was patented.

Mr. GUNN: There was another exception.

Mr. FOLSOM: No, that was in the Senayor Stewart claim, not in the Senator Stewart fraction.

Mr. CULLEN: The defendant does not pretend to be the owner of the Quaker claim.

Mr. FOLSOM: Oh, no.

The COURT: I understand. I suppose you will not need the regu-

lar reporter, and it will make better room for the two that you have engaged if he is excused.

Mr. CULLEN: He may be excused if he desires.

Mr. FOLSOM: As far as I am concerned, I would be per-
74 fectly satisfied with Mr. Libby's report, but I understand he desires to be relieved.

The COURT: I would be very glad to relive him, because he has been recently the victim of an accident.

Mr. GUNN: If your honor please, we are ready to proceed. I take it that in view of the fact that your honor heard the preliminary hearing in this case, it is unnecessary to make a statement of it, or to read the pleadings, because your honor is familiar with the issues.

The COURT: Yes, I am quite familiar with the case as developed by the preliminary hearing. You may proceed.

75 WILLIAM CLANCY, after being duly sworn as a witness for plaintiff, testified as follows:

Direct examination.

By Mr. DINES:

Mr. DINES: Before we proceed, your honor, we have answered ready to save time in this case on account of the number of witnesses and the counsel, who would be discommoded otherwise, on the assurance that we will have certain models and exhibits ready as the trial progresses, and we have no reason to believe that we will be disappointed, but as a matter of caution I wish to say to the court that if it should be that we are disappointed in receiving these matters before our other witnesses are done, we might be compelled to ask the indulgence of the court at that time for a few hours or half a day. We do not anticipate it, but we think it fair to announce that.

The COURT: In such an event the court will be inclined to indulge you to any reasonable time.

Q. State your full name, residence and occupation?

A. William Clancy, residence Kellogg, mining engineer.

76 Q. How long have you followed the occupation of mining engineer?

A. Ten years.

Q. Had you had before entering that vocation any training at any technical school?

A. I am a graduate of the University of Arkansas, as a civil engineer.

Q. Where has been your experience in mining engineering?

A. I graduated in June, 1902, and from June, 1902 until early in 1906 I was in the employ of the Montana Ore Purchasing Company as a mining engineer. From 1906 until the latter part of 1908 I was in the employ of the East Butte Copper Mining Company as a mining engineer, and for a short time after that I was working on prospects on my own account until June, 1911, when I entered the employ of the Stewart Mining Company as a mining engineer, and since that time I have been constantly employed by them.

Q. During the ten years that you have followed this vocation, have you had opportunity to examine veins of mineral bearing rock, the development on those veins as shown in the working of
77 the mines, and the position and location of ore bodies underneath the ground, and the extraction of these ore bodies?

A. I have.

Q. Since you have been connected with the Stewart Mining Company, to what properties have your duties extended, and where?

A. The properties of the Stewart Mining Company, near Wardner. The claims under which the work has been done are the Senator Stewart Fraction, and the Senator Stewart, the Switchback, the Lazy Jean and the Ontario Claims.

Q. Please designate—I call your attention to an exhibit which is shown here preliminary to its identification, which will afterwards be identified as Plaintiff's Exhibit Number 1, and I ask you to point out on this exhibit the lines of the Senator Stewart Fraction.

A. Beginning at the northwest corner of the Senator Stewart Fraction, to which I am now pointing; then south eastward along the north side line of the Senator Stewart Fraction to the northeast corner; then southwestward along the east end line to the southeast corner; thence along the south side line to the intersection of the south side line of the Senator Stewart Fraction as located with
78 the Quaker east side line; thence along the Quaker east side line to the intersection with the west end line of the Senator Stewart Fraction as located; thence along the west end line to the northwest corner of the claim, the point of beginning.

Q. Please state if, in connection with your duties, you have surveyed out those lines on the ground from the patent description?

A. I have surveyed those lines and located the corners as they are upon the ground, and they check with the description in the patent.

Q. Are those lines correctly designated on the exhibit heretofore referred to as exhibit 1?

A. They are correctly designated on the exhibit.

Q. Now, under those direction and supervision and by whom were all the surveys made, resulting in the showing of the workings, the position of the workings, the positions of the upraises, constituting the body of Exhibit No. 1?

A. I have either surveyed all of the workings myself which are shown upon this map, or have checked with surveys which
79 were previously made, and the map was made under my supervision. I wish to state that there is a small portion that was surveyed before I came with the Stewart Mining Company, but I have since checked that.

Q. Now, take the workings that are shown in the Ontario claim; from what data are those workings placed upon the map?

A. They were placed upon the map from maps that were received from the Ontario Mining Company, purporting to be a true representation of the workings, and I have also checked their surveys by means of compass surveys and measurements, and find them to be correct.

Q. The Ontario Mining Company, the defendant in this case?
A. Yes, sir.
Q. Now, please state to the court generally whether or not the plan map referred to as Plaintiff's Exhibit 1 correctly represents the position and location of such lines, workings and other data as it purports to represent on its face?
A. It does.
Q. In following the southerly side line of the Stewart
80 Fraction claim, you took a diagonal course back to the westerly side line intersection of a diagonal, which is eliminated from the Stewart Fraction, a triangular strip of ground marked Quaker. Please state if that is the tract of ground, the portion of that which is referred to in the exception that counsel have already stated to the court there is a stipulation concerning?
A. Yes, sir. It is the conflict between the Senator Stewart Fraction and the Quaker location. The Quaker was the prior location.
Q. Are the end lines of the Senator Stewart Fraction parallel?
A. They are.
Q. Are the side lines parallel?
A. No, the side lines are not parallel.
Q. Now, will you please describe in your own way and generally, so the court may understand, calling attention to the particular numbers of the workings to which you refer, so that your testimony may be identified with the map, exactly what workings had been done on the Senator Stewart Fraction at the time of the beginning of your employment with the Stewart Mining Company?
81 A. On this map there is a working shown in blue, which is marked "Old Lower Stewart Tunnel." That level was nearly all done at the time of my arrival. I will describe it: Beginning at the tunnel, going southerly along the working marked "Old Lower Stewart Tunnel" to the intersection of the working marked "Drift No. 2 West," and also one marked "Drift No. 1 east." This Drift No. 2 West was extended to a point marked upon the map "9505-C." That was the approximate face of that drift at the time of my arrival. On the drift No. 1 East, the eastern face at the time of my arrival was at a point on the map marked "2102." The work to the east and west of those points has been done since my arrival. The working marked upon the map Drift No. 2 East was driven before I arrived. The working on the map marked "Deering Crosscut" was driven, also the drift marked "Drift No. 5" and "Drift No. 5 West." Drift No. 5 West was driven in its entirety at the time of my arrival, but Drift No. 5 East has since been extended from a point on the map marked "No. 127" eastward. Going back to the intersection of the old lower Stewart Tunnel and the drift No. 2 west, and going on the western branch of the tun-
82 nel in a southerly direction, this tunnel had been driven, with its various branches, to the westward to the southwest end, beyond a point marked 9530. The tunnel has not been extended since my arrival. The short working marked No. 4 Lateral, south of No. 7 raise, was extended since my arrival, toward the drift marked Drift No. 4 East. Otherwise, all the workings on the tun-

nel level were driven at the time I arrived at the Stewart Mine. All the workings shown upon the map as the upper Stewart Tunnel were driven, and the 100 foot level at the time of my arrival consisted of a station and a crosscut from the shaft which extends below the Stewart Tunnel level, marked Shaft No. 1, upon the map. There is a crosscut from the shaft in a southeasterly direction beyond the point on the map marked 9908. From this point drifts extended east and west; westward the drifts extended a short distance beyond the point on the map marked 2613, and eastward approximately to the point marked 9940, and a crosscut marked West 105 Crosscut was driven to the point marked 9981 upon the map, and the crosscut north from the shaft was driven in its entirety before I arrived at the Stewart Mine. The only extension on the 100 foot
83 level since my arrival was the extension of the 105 Crosscut to its present face, and the extension of drift No. 5 east to its present face.

The 200 foot level at that time was just a station from the shaft, which is a continuation of the No. 1 shaft from the 100 foot level down—a station and crosscut south marked upon the map "200 South Crosscut" and the "200 North Crosscut," and from the 200 North Crosscut, near its end, there was a draft only a short distance of about probably ten or fifteen feet long in either direction. From the south crosscut there were drifts extending east and west. The drift marked "Drift No. 205" on the map was extended to a point approximately marked "113" upon the map. The working shown as the East 208 Crosscut was also driven at that time. The drift westward from the south crosscut was driven to a point approximately at the present location of Raise 200K as shown upon this Exhibit No. 1. I overlooked a crosscut on the intermediate level, the level marked "104 Intermediate." It is a crosscut from the raise marked "100C" driven northward; it was driven at that time, but no other working on that level. I think that covers all the work which was done on the sill floors, or levels at the time I ar-
84 rived.

Q. Was any of the work done in the Ontario that is shown in the lines on Exhibit No. 1 at the time of your arrival?

A. The only work in what is now the Ontario Mine was the Silver King Tunnel, which at that time extended to the point where the Silver King workings crosses underneath the 200 foot level of the Stewart Mine, as shown upon Exhibit 1. There was no working from this tunnel.

Q. Had any stoping been done in the Ontario at that time, at the time of your arrival and employment in June, 1910?

A. That is rather general. I don't know, about the entire claim, but for some distance——

Q. Any part of the stoping that will be referred to in these investigations?

A. No, on the drift shown here there was nothing done.

Q. Now, all of the other workings, than those that you have referred to have been done since your employment with the Steward Mining Company and to what extent have you followed those work-

ings day by day as they were done, both in the workings that
85 were shown on Exhibit 1 and in the stoping that was done from these different workings?

A. I was there every day keeping a record of the work as it progressed, and taking notes of the geology.

Q. As the work progressed, did you take the course and dip of the different workings on the vein at different places as shown in these workings?

A. If there was any vein or fault in the working, I would take the course and dip of it; that came in the notes on the geology.

Q. Now, please state whether or not the small figures that are put on this exhibit referring to different portions of these workings from time to time, have been identified in any way underenath the ground and upon the ground itself?

A. The small figures to which you refer are survey points in the ground, and that represents the number which is to be found on the *breat* tag at that particular place underground.

Q. Are those survey points still to be seen in the workings in the mine at these different places?

A. A great many of them are; where the workings are
86 open they are still in place.

Q. And how are they indicated?

A. The survey points which the Stewart Mining Company uses are of copper or tin, yellow in color, about the size of a half a dollar and circular, with a number stamped upon them.

Mr. DINES: We will offer Exhibit No. 1 in evidence, if your honor please.

The COURT: It will be admitted.

Plan Map marked Plaintiff's Exhibit No. 1.

Q. Mr. Clancy, Exhibit 1 is what is called a plan map. Please explain what you mean by a plan map?

A. A plan map of mine workings is a projection of these workings on a horizontal plane, a lower horizontal plane, as if you were an infinite distance above the mine, and looking down upon it.

Q. What is there in addition to the plan map that would show the extent of the stoping; not on this map, but what is there in the way of exhibits which will hereafter be introduced to show the stoping?

A. We have a map which is a plan map with the stope
87 floors marked upon it.

Q. This plan map, exhibit 1, does not purport to show the stoping?

A. No, it is a map of the levels, or sill floors.

Q. Now, shown on this map you have a number of lines at different places, black lines parallel to each other and going from one level to another level or sometimes above the level without connecting with any other, which I indicate to you at different places on this map, all black parallel lines. Please state to the court what those lines represent?

A. Raises or shafts; the black parallel lines close together are the

raises; the shafts are marked with black parallel lines showing the space between, not so close together.

Q. Very well. I noticed in red coloring in the northerly portion of the Senator Stewart Fraction claim a working which is marked "Apex Drift", please state to the court when that working was driven?

A. In the last month or two.

Q. Beginning at a point marked 402 there is indicated a working on the map running in a southeasterly direction. What is
88 that?

A. That is a tunnel from surface to the Apex drift.

Q. Upon what slope of the mountain, if any, is that tunnel driven at the mouth?

A. It is the northwest slope.

89 Q. At the connection here with the working marked Apex drift running as indicated by the pointer and designated by the figures 2519, 2566 and 2502 with figures 2117 at the point of connection between the cross cut tunnel to which you have just referred and the Apex drift and containing a branch running to the southwest with the figures 2114 and 2532 indicated in the working; are you familiar with those workings and with what they show?

A. I am.

Q. What is the ordinary country rock surrounding the veins in this immediate section of country shown here in exhibit 1?

A. Quiartzite.

Q. Through what does your tunnel pass after it enters cover until it reaches the figures I just gave you at the point of its connection with the apex drift?

A. It passes through quartzite.

Q. What does it show at the point indicated by my pointer, which are the figures 2117?

A. At that point the apex drift is shown in the foot wall of the Stewart vein; it is also the intersection of a raise marked upon the map raise 4-east?

90 Q. What is that raise four east?

A. That is a raise that was put upon the foot wall of the vein from the top of the stopes above the old lower Stewart tunnel level extending from the top of the stopes to the surface along the foot wall of the vein.

Q. What was this raise driven on, what is it for, out in the body of the raise or the top of the raise?

A. From the old lower Stewart tunnel level a short distance east of the place where the drift four east appears on the exhibit, the raise extends upward in mineable ore, that is, what are now stopes worked out. Beginning at a point—the top- of these stopes are shown upon the map in horizontal projections about twelve feet south of the working shown as the Apex drift near the point marked 2117; the raise extends upward along the foot wall of the vein with vein material on all sides of the raise except on the foot wall side until within ten feet, approximately ten feet, of surface, where the surface wash appeared.

Q. What portion of the vein have you in the point that you have designated ten feet beneath the surface in that upraise?

A. The top or apex of the vein.

91 Q. You speak of vein material. Please state to the court what that vein material is and how you know it to be vein material?

A. It is the vein material that we find—it is the filling between the walls in the veins we find in this district; it is crushed quartzite, quartz and iron stain, and near the surface we sometimes find little pyromorphite, or some carbons, very little of that; it is usually iron stain and quartz; that is what indicates our vein, that is, near the surface.

Q. Is the foot wall in solid formation at that point or broken up?

A. The foot wall is continuous.

Q. Well, is it solid or broken up?

A. It is solid.

Q. Upon what is the portion of Apex Drift extending to the northerly and easterly driven from the point 2117 already indicated?

A. It is driven along the foot wall of the Stewart vein.

Q. Just describe that now, if you please, in your own language to the court?

92 A. Describe the whole drift?

Q. Just describe that whole drift from point 2117 to its present breast?

A. Starting at the foot wall of the vein and drove along the foot wall keeping the wall on the right hand side or lower side of the drift, to about point 2502—along one direction is shown the point 2502 where the vein turns in a southeasterly direction, following the footwall of the vein all the way to its present face. Near the point 2502 on the left hand side or northerly side of the drift a large fault appears as shown by the irregular line, from the drift, we passed through that and found quartzite on the other side. The present face is in the vein. That drift is now being extended on vein material for its entire length. Then we came back along the drift opposite the point marked 2519, across cut is driven southward for a distance of thirty feet from the foot wall of the vein or the south side of the Apex Drift. This cross cut is entirely in vein material, and the face of the cross cut is in broken up ground which is caused by caving from the stope below; there is lead carbonates, quartz——

Q. I did not catch that. Where did you say that cross-

93 cut is?

A. It is thirty feet south of the Apex Drift.

Q. And is driven in what direction?

A. A southerly direction. At that point we stopped without reaching the hanging wall of the vein on account of the caving from the stope below; we could not extend it to the hanging wall, so the way the situation stands, we have the foot wall and thirty feet on the vein, but have not crossed the vein, but the vein is clearly shown in the crosscut there as vein material.

Q. How does the vein material which you have indicated as shown in the cross cut compare with the vein material that you had in the raise up above the apex level to the point of its highest development and termination at ten feet below the surface.

A. It is the same character of material.

Q. I notice you were using a scale a moment ago; what is the scale as shown here?

A. One inch equals thirty feet.

Q. Is this work being extended at the present time?

A. The eastern face of the Apex Drift is being extended, but the western face is not.

94 Q. Have you yet reached the hanging wall in the face of the crosscut on the vein to which you have just called attention?

A. No, sir, we have not.

Q. How wide from present development at that point is the vein shown to be?

A. The development is shown thirty feet, that is, is shown more than thirty feet.

Q. What is the character of the foot wall that you say you followed in going along the easterly branch of the Apex Drift?

A. The foot wall is shown by a clay gouge.

Q. And at any points have you passed through the clay gouge?

A. Yes. We were through the gouge all the time which in running a drift as that is, the foot wall is on the south side and the bottom or on the north side and the top, with the dip of the vein as it is there, so the north side of the drift and the bottom is through this gouge all the time, but opposite the point 2502 we extended it for a distance of thirteen feet.

95 Q. What is the wall, the foot wall of the vein as shown in that working, what material?

A. Clay gouge containing some material in places.

Q. Is it in place?

A. It is.

Q. What is this country out in the north of the Apex drift?

A. Quartzite.

Q. What workings have you to show that it is quartzite?

A. The extension of fifteen feet beyond the fault that I spoke of is found to be quartzite.

Q. What is the small disconnected working there that is shown on the map and marked—I don't think that is given a mark except a red line?

A. That is the tunnel in the surface.

Q. What is in that tunnel; what does that tunnel show?

A. Croppings; vein croppings.

Q. Is it connected with any other of the work below?

A. No, it has no connection with any of the work below.

Q. Now, take from point 2117 to the westerly face of the Apex Drift, and tell in your own language to the court, if your

96 please, what you encountered there and what it now shows?

A. From the point 2117 westward the Apex drift was

driven along the foot wall of the vein encountering thick gouge and galena in one or two places. Near the point marked 2143 and near 2532 we had little bunches of galena on this continuous footwall. Just near or just beyond the point 2532 we encountered a fault beyond which the vein does not extend. We drove the Apex drift westward on the vein as *the* far as the vein remained above the floor and stopped.

Q. Are you able to identify that fault that you encountered in the west branch of the Apex drift with any fault that is given a name or designation by the miners in that district?

A. The entire vein from one end to the other—from the north end to the south end the stopes have been cut off by a fault apparently, that is, they have been cut off at a point we shall mark upon the map as top of No. 7 raise, top of raise marked raise two west, and in that Apex Drift. From the course and dip of the fault as shown in raise two west and in the west face of the Apex Drift I would think they were the same fault. Extending on the western
97 end it has a different strike, but from the location of it I would identify it as the same fault extending through the entire length of the working on that level.

Q. Please indicate from what this upraise is driven, the upraise I designate is the upraise that you have just described as going to within ten feet of the surface, going up above the Apex Drift, and from the Apex Drift at this point. Please indicate this working colored in blue and marked drift four east with a number of your survey points in it, and tell the court what that is, when it was done and what it shows now, and what you encountered in the progress of that work?

A. The working extending eastward from the Deering crosscut marked drift 4 east, beginning with the nearest survey point 9962, is upon the vein, was driven upon mineable ore to a point marked 2090. All the stopes between survey point 9962 and survey point 2090 was mined and shipped. The raise marked raise 4 east is on the vein from this working to the top of the stopes at the point shown upon the map approximately 12 feet south of the Apex drift.

Q. Please indicate that point?

A. (Witness indicated.)

98 Q. Can you identify it on the map?

A. About twelve feet south of the Apex drift, along raise 4 east.

Q. Now, your blue workings at that point are designated upon exhibit 1 as the old lower Stewart Tunnel. Please describe from the working there that you have already indicated in blue in an easterly direction the working that is shown there the most northerly and state to the court what is found there now and what you found there in the progress of that work?

A. Beginning at the point marked upon the map as 2550 in the drift 4 east, we begin a cross cut across the vein. At or near the point 2550 the vein existed at the bottom of the cross cut, exists in

the bottom of the drift 4 east, from which the crosscut is driven. Ore can be traced in this crosscut near the point marked 2503.

Q. Is that your first survey point as you go east?

A. Yes, sir; I mentioned that so you could identify it.

Q. Yes, sir.

A. There is ore in this crosscut to the point where a raise marked raise No. 3 east is up in a southerly direction from this
99 crosscut. Along the space of the crosscut in which the words No. 3 east crosscut appear is broken material. It is under the vein, and probably a part of the vein; there is some ore in it once in a while, but it is all crushed, due to the condition of the vein at that place. We again encounter the vein in commercial ore at the point 2515; we have about a foot of good ore there in the back.

Q. Just indicate the point there with your pointer so his honor can tell the exact place you refer to.

A. There is ore at the point 2515 to which I am pointing. The drift is extended eastward on ore beyond, by the point 2512 and 2571. Between the points 2571 and 2549 there is no more galena or commercial ore, as I have expressed it, but the vein extends beyond the point 2549 up or near the point 2584, and that is the end of the upward termination of the vein.

Q. How do you know that to be the end or upward termination of the vein?

A. Because you can go down upon the vein but cannot go up upon the vein on its true dip at that point.

Mr. GRAY:

Q. What point was that, Mr. Clancy?

100 A. Near survey point 2584. The point to which I am referring is also the top of raise which is marked upon the map raise 218 east.

Q. Take that portion of the working that you have just described from the point where the upraise that you have referred to enters it in an easterly or northeasterly direction, what does that show in there?

A. Quartzite.

Q. Then where did you pass through the vein and into the country rock or quartzite?

A. We passed through the big fault which we recognized in this mine and is known as the Osborne fault near the point 2584; that is about opposite the survey point 2584 on the north side of the drift, and passes through the south side of the drift at the intersection of the north side of raise 218 east and drift 5 east.

Q. Follow the upraise that you have referred to and indicated by parallel lines marked R. 218 east and tell the court what can now be seen in that upraise and what was encountered in it as the work of driving that upraise progressed?

A. Which way do you want me to go, from the top down
101 or bottom up?

Q. Well, you can take from the top down as we are already at the top of it.

A. The top of the raise marked upon the map as R 218 east at the intersection of the vein and the Osborne fault, for a short ways, probably a distance of ten or twelve feet, as shown upon the map, to the point, first bend in the raise as shown upon this map, there the vein appears on both sides of this raise 218 east, extending downward to a distance of probably twelve or fifteen feet as shown upon this map above the level shown as the 100 level and marked drift 105 east; the raise passes through the eastern extremity of this level and stopes which were driven upon the 100 level. Below the 100 level we have a fault on the north side of the raise and a vein on the south side, and the same condition exists in this raise until we reach the 200 level, until we reach the top of the 200 level, because the raise was started on the intersection of the fault and the vein and was intended to be driven continuously on it, but at the bend near the top which I indicate with my pointer, it cut off just a little bit——

Q. Well, what portion of the vein have you shown in that
102 upraise?

Q. We have the apex of the vein or its termination on its upward course.

Q. What direction and what course do you proceed on other portions of the vein lying deeper in the ground from the portion you have designated as the top?

A. Downward.

Q. And what course do you proceed from the point that you have designated in the upraise from the apex drift to reach other portions of the vein underneath the surface?

A. Downward.

Q. And what course do you proceed from the portion of the vein that is shown in your Apex Drift to reach other portions of the vein underneath the surface?

A. Downward.

Q. From your point where your upraise is shown on exhibit 1 to connect with the 200 level or immediately above that level proceeding on easterly, please describe that working as you go along the two hundred level toward the easterly end line.

A. Beginning at a point marked 130 upon the map which the vein is beneath the back and bottom of the drift, extending
103 eastward, the vein gradually disappears from the back—that is not a good expression, but I mean it does not extend to the back. The last twenty feet of this drift simply as the fault—you could not distinguish any vein in the last twenty feet of the drift. The last we saw of the vein it is in the bottom of the drift.

Q. And what do you have to the north, what character of material to the north of this working where the vein is shown?

A. Quartzite; that is quartzite so far as shown by those workings.

Q. Are you able to identify or trace the vein as it is disclosed in the upraise from the 200 through the 100 to the Stewart tunnel level and immediately contiguous there through portions that you have designated as the top with the vein anywhere else throughout the mine?

A. It is connected with all other portions of the vein as shown throughout the mine.

Q. This being a plan map don't show all of your workings. What, in fact, have you in the ground between the upraise which we have heretofore referred to as extending into and above the apex drift and the most easterly point where your vein is disclosed on
104 the 200 level to the east of the raise from that level; just describe to the court generally, describe those stopes. We will have a stope map later to identify and show the exact extent, but I simply wish this as a general question.

A. The entire eastern portion of the 200 foot level from the 200 south crosscut east to raise 218 east is stoped to the 100 level. The entire eastern portion of the 100 level is stoped from the 100 south crosscut from a point marked 9907 eastward to near the point 9940.

Q. Designate that, please?

A. And stoped up to the tunnel level near the point marked 2571. There is stoping to a limited extent above the easternmost portion of the 100 level from point 9940 eastward, but those stopes do not extend to the tunnel level. The commercial ore pinched out and the stopes were not extended.

Q. Is some of the stoping you refer to here shown here on this map, by any of this map?

A. No, that is a sill floor work. It might be termed stoping, but it is all on the sill floor.

Q. Will you proceed from the point indicated as the face
105 or breast of the 200 foot level on exhibit 1 through the upraise that is indicated in black parallel lines near and parallel, substantially parallel, to the easterly end line of the claim, and state to the court what that working discloses now, what can be seen in it and what showed in it as the work progressed in which it was made.

A. The raise shown upon the map marked raise 314 east, beginning near the point marked 2551 on the map on the 300 level, was a raise on the true dip of the vein from the 300 level extending upward above the 300 level for a distance of between twenty-five and thirty feet on minable ore. When the top of the ore was reached we had nothing but clay gouge and poor vein. Extending for a short distance above that we met the fault which we call the Osborne fault. Then the raise extends up to the 200 almost vertically, about 75 degrees, along the fault; there is nothing but the fault plane and quartzite in the top of the raise.

Q. Please designate on the map those workings, the highest point on the vein that you can see as shown?

A. The highest point on the vein as shown upon this map is between the intersection as shown upon this map of raise 314 east and the Green working of points 2089 and 2082. I am only
106 using that to show the location.

Q. And what distance from the easterly end line of the Stewart Fraction claim?

A. Approximately ten feet west of the eastern end line of the Stewart Fraction claim.

Q. Following that upraise to its beginning, what is indicated there in the brown color on exhibit 1

A. 300 level of the Stewart mine marked drift 305 east.

Q. Now, please describe to the court what is shown in the drift 305 east—did you say?

A. Yes, sir.

Q. 305 east, in this portion of the working connected with 305 east which is shown in brown below the raise to which you have just referred and immediately adjacent to and crossing the easterly end line of the Stewart Fraction claim.

A. A large body of ore in the place just described by you near the points 2093, 2068, 2551 and 2528.

Q. Well, what vein is that in?

A. It is in the Stewart vein.

Q. What does it show at the point of crossing the easterly end line of the Stewart Fraction claim?

107 A. At the point of crossing the easterly end line of the Senator Stewart Fraction claim near the point 2528 there is commercial ore.

Q. Is the top of the vein shown at that point—at any point there; if so designate the point and state how it is shown and how you determine it to be the top

A. At a point approximately ten feet east of survey point 2528 the top of the vein is shown. The same condition exists in the drift shown eastward from point 2528 as I described on the 200 level. The point which I just described ten feet east of survey point 2528 we have the intersection of the vein and the fault, and proceeding eastward finally the vein is seen about ten feet west of survey point 2569 in the bottom of the dip. East of this we have nothing but the fault and quartzite.

Q. And what do you have to the north of the point that you have designated as the top—on upward what do you come to?

A. Fault and quartzite.

Q. Describe the appearance to the court of the ore at that point where the vein is shown against the fault or the face of the fault.

108 A. At this particular place is a very good body of ore, four or five feet of first class lead ore, against the fault at this particular place in the east end of the three hundred foot level of the Stewart mine.

Q. Do you know what the extent of that ore is, how far that body of ore can be traced down so far as these other workings are concerned, or identified with other portions of the Stewart vein?

A. That is the same body of ore which has been mined all through the Stewart mine and the Ontario mine, the workings are on continuous mineable ore.

Q. How do you know it to be the same value?

A. Well, you can follow on openings which have — made for the purpose of extracting ore and can see the vein in all places, or I have done so following through stopes and raises and drifts, all connected on the vein.

Q. How have most of these workings been run, in what pursuit?

A. In the extraction of ore.

Q. How many of them have been run; how many workings on this map can you designate as having been done for the purpose of deve-opment work in connection with this litigation; just
109 point out, if you please, to the court how much of it is in the development and showing connection of this suit and how much in regular course of mining?

A. The drift shown in green upon the map east of survey point 2513 to and beyond survey point 2537; raise marked 415 east, and the little drift shown on the map on that raise eastward, was done for the purpose of litigation. Raise 415 east, the drift shown eastward from the top of this raise, was done by the Ontario Mining Company with the consent of the Stewart Company.

Q. Designate to the court, if you please, that part that was done by the Ontario Company?

A. Raise 415 east and drift from the top of this raise. Drift 305 east was extended eastward from a point——

Q. Show with the pointer on the map, if you please, so the court can see it?

A. From a point east near the east end line of the Senator Stewart Fraction, is extended easterly upon the fault to its present face.

Q. Give the length of that drift, if you please?

A. Length driven for the purpose of this litigation is approximately forty-five feet. The entire raise marked raise 314
110 east——

Q. Give the length of each working, if you please?

A. (Continuing:) was driven from the 300 level to the two. Do you want the slope distance of these raises?

Q. Yes, sir.

A. I will have to calculate all those.

Q. Well, can you give it vertical at once?

A. I can give it vertical or give the horizontal distance as shown here.

Q. Well, give the horizontal distance, if you can do that more quickly without taking the time?

A. It shows a horizontal distance on the map of approximately sixty feet. Drift 205 east was extended eastward for a distance of approximately forty feet. Raise 218 east was driven from the 200 level to drift 5 east into the old lower Stewart tunnel. The horizontal projection as shown upon this map is approximately 155 feet. The workings shown upon the old lower Stewart tunnel marked east No. 3 crosscut was driven from near survey point 2550 to survey point 2515. The working along the vein known as drift 5 east was extended from 2515 to the present face, a distance of probably 250 feet. I believe I neglected to give the length of
111 No. 3 crosscut, which is approximately 170 feet. Also raise marked raise No. 3 east was driven from No. 3 crosscut at a point approximately 23 feet eastward of survey point 2503. Raise

No. 4 east was extended from the top of the stopes the workings shown as drift 4 east along the foot wall of the vein to the surface. The tunnel was driven from the surface to the working shown as the apex drift. The apex drift was extended westward and eastward to their present faces. The crosscut was driven south upon the apex drift opposite survey point 2519, a distance approximately of 30 feet. The length of the apex drift westward from the top, from surface, approximately 7 feet, approximately 130 feet to the eastward. Also raise No. 7, a raise is extended up to the fault which cuts off the vein, thence backward along the fault to the tops of stopes showing the termination of the vein against the fault.

Q. You are speaking now of workings near the southerly—in the Senator Stewart below the southerly side lines of the Senator Stewart Fraction, are you?

A. Yes; No. 7 raise above the center of the Senator Stewart claim.

112 Q. The other workings you have referred to previous to the last one are all within what claim?

A. They are all within the Senator Stewart—no, nearly all of them are within the Senator Stewart Fraction claim. The drift No. 305 east, extension eastward, is in the Switchback claim; also the drift marked 405 east extends eastward from survey point 2513, and the working I described from that is in the Switchback claim. Then in the Ontario claim is a raise which was extended by the Ontario Mining Company for the Stewart from the backs of the stopes in the Gray ore body to connect with the drift on the 300 foot level near the survey point 2507. This working was driven by the Ontario people for the Stewart showing the continuity of the ore body. I believe that is all the work we did for the litigation. There is a raise marked raise 2 west which was done before the preliminary hearing in this case.

Q. Along the southerly side line of the Senator Stewart Fraction?

A. Yes, sir. It shows the apex of the vein being cut off, which served a very good purpose in the litigation.

Q. But it was not done in connection with this litigation?

113 A. No.

Q. Was the crosscut tunnel and the apex drift and the crosscut in the vein for the hanging wall in the apex drift done since the hearing of the injunction in this case?

A. It was.

Q. What other work has been done since the injunction, or what connections have been made since the injunction hearing?

A. Most of this work which I have just described was done since the injunction hearing. The connection between the ore body shown in the working marked drift 4 east to the apex, and the apex drift both east and west, the connections of ore bodies shown by drift 4 east southward through drift No. 3 east, and through raise No. 3 east, to the stopes above drift 5 east; also the extension of drift 5 east to the apex of the vein shown near survey point 2584; raise 218 east was driven, extension of drift 205 east, raise 314 east, ex-

tension of drift 305 east to its present face. The working shown and marked drift 405 east between survey points 2513 and a little beyond 2537; also the raise 415 east and the drift from the top of that raise is all done since then, and the raise marked upon
114 the map as Gray raise has been done since that time. And raise 223 W. has been extended on mineable ore to the tunnel level since the injunction hearing. At that time we were within fifteen or twenty feet of the top. Since then it has been extended to the tunnel level and connected on the vein.

Q. The last that you refer to was connecting the 200 level?

A. 200 level to the tunnel level.

Q. In what claim?

A. In the Senator Stewart claim.

Q. And the one immediately preceding that, in what claim was that?

A. Where I described the Gray raise?

Q. Yes.

A. That was in the Ontario claim.

Q. Mr. Clancy, I notice on this map in blue in the westerly portion of the Senator Stewart Fraction claim designated certain workings. Please say whether or not they are on a vein, any part of this is on a vein?

A. You ask if they are on a vein?

Q. Yes, sir, or intersect a vein?

A. The working marked drift 2 west, 45 foot level——

115 Q. In yellow?

A. 35 foot level is marked in yellow; drift 2 east, and the work-ngs marked drift one east are upon veins.

Q. Please state whether or not those veins have any connection with the vein in the Senator Stewart Fraction upon which the stopes and workings of which you have testified are driven?

A. No; they do not have any connection.

Q. Well, have you any reason to say that they are not. If so, state to the court what it is?

A. The reason I have to say that they are not is because I have no knowledge to say that they are.

Q. There is no connection between the two?

A. There is no connection between them.

Q. At what point from the old lower Senator Stewart tunnel as you enter along the course of that tunnel do you encounter a vein that can be identified as the Senator Stewart vein or the Stewart vein upon which the workings of the Senator Stewart Fraction mine are located?

A. Entering at the portal of the old lower Stewart tunnel where the works appear upon the map going in a southerly direction and turning to the left at survey point 9504, thence along the
116 level in a southeasterly direction, running by where the words "Deering crosscut" appear, to a point near survey point 9962, the Stewart vein was encountered.

117 Q. Designate with your pointer the point where that vein was intersected by the tunnel, if you please?

A. There.

Q. What working on the vein extended from that point, if any?

A. The working extended eastward marked Drift 4 East, and westward, marked Drift 4 West, extended on the vein from that point.

Q. You have already followed the upper, or what is called the East No. 3 Crosscut, as shown upon that level in blue. Now, take please from the point here and follow the southern branch, and state to the court what that includes, following from the point here; you can see it, and please designate that point?

A. Beginning near survey point 9962 the vein existed with commercial ore of considerable width at that point.

Q. How wide was your commercial ore at that tpoint?

A. Fire or six feet or six to eight feet. I think it was about eight feet wide.

Q. And what character of ore?

A. Good commercial ore, shipping ore.

Q. What is your commercial ore in that vein?

118 A. Galena. It simply depends on the quantity of Gelena, the value of the ore. Then the crosscut which is shown upon the map marked Deering Crosscut extended in quartzite, evidently underneath the vein from the relation of other workings it is known to be.

Q. When do you encounter the vein in that crosscut?

A. On or about point 33 we encounter the vein, above which a drift was driven east and west from survey point 43 on the vein, and stoping has been done above Drift 5 East and Drift 5 West.

Q. In here?

A. In here and here.

Q. To what extent has stoping been done in drift 5 East from the point where the crosscut intersects the vein again in an easterly direction?

A. Stoping was done above Drift 5 East between survey point 127 and 43 for a vertical height of about 21 feet, that is, three floors. There the vein is flat, and also poor. Stopes above this No. 5 East.

Q. Now you say "flat." What do you mean by that?

A. At the point 20 feet above the level—it was prosecuted to a height of 21 feet, three floors——

119 Q. Could the vein at that point be still distinguished as you went up from the commercial ore onto the vein material?

A. Oh, yes, the vein could be distinguished, but it was not profitable to remove it.

Q. How high did that vein extend at that point?

A. The vein at the point in the top of the stopes above survey point 43, this raise No. 3 connects these stopes with the East No. 3 crosscut on the vein.

Q. How much of the vein is exposed above the portion containing your commercial ore or Galena in that working?

A. It is irregular; in some places in the stopes we see five to ten feet sometimes of material containing specks of galena, but it is not commercial ore. The hanging wall is not determined at any particular point in there, that is, in the stopes.

Q. Have you the walls disclosed at any other portion of the workings in there than the stopes, the walls or either of the walls of the veins?

A. In the westernmost portion of this 5 East, near survey point 77, we have the hanging wall exposed.

Q. What did you have in character of material in the
120 crosscut that you have designated as running between the points 9962 and the point 43?

A. There was quartzite in that crosscut.

Q. To what extent has stoping been done in the easterly branch of this working indicated as Drift No. 5 West?

A. Stoping above the branch marked "Drift 5 West" was at various heights up to five floors or thirty-five feet. The stopes of the height of 35 feet is approximately over the point marked "Survey point 45."

Q. What did you have in the back of the stopes at that point after you had taken your galena or commercial ore out?

A. Well, there were in the back of those stopes we had the vein of poor material, not profitable to remove.

Q. Were the walls disclosed in the stopes at that point or either of the walls?

A. My recollection is that height wall was disclosed in the stopes at that point.

Q. What is the blue marking at the extreme end of Drift No. 5 West where it takes a turn up in a northerly direction?

121 A. That is a crosscut.

Q. What is the crosscut in?

A. I don't know.

Q. Have you ever seen that crosscut?

A. I have never seen this particular portion of it; it was one of the workings which was driven before I went there.

Q. Now, going down from the point where you indicated the vein on the southerly branch of the old lower Stewart tunnel, please describe that from the point where it connects with your main branch as far as it discloses any ore bodies, and describe to the court the conditions there above as they can be seen now and as you found them as any of the work might have progressed; I understand that that portion was driven while you were employed by the Stewart; is that right?

A. No, this part was driven before I was employed by the Stewart. The stoping was done afterwards.

Q. When you got there, what occurred there as the work progressed?

A. There were stopes for the entire distance in the easternmost portion of the old lower Stewart tunnel from a short distance
122 east of the raise marked "Raise 4 East" to the southwesternmost end of the level—the stopes were all in mineable ore, of various widths from five to fifty feet. The easternmost portion had an average width of probably 30 feet. The vein was continuous and unbroken until near the top of the stope, until it reached a portion between the raise marked "No. 7 Raise" and the southernmost end

of the level marked "Old Lower Stewart Tunnel Level", at which point the vein was cut off by a fault on the upward course, and also in the working marked "No. 7 Crosscut" and near the top of No. 7 raise the vein was cut off by the fault at the top of the raise marked on the map "Raise No. 2 West" the vein was cut off by a fault, but otherwise it was continuous from one end to the other.

Q. The raise that you have just referred to where the top of the vein is shown is along what line?

A. It is along the south side line of the Senator Stewart Fraction.

Q. Now, confining yourself, please, to the portion of the southerly branch of the old lower Stewart tunnel lying between the intersection of the vein in the old lower tunnel, main branch, and the up-
123 raise along the southerly side line of the Senator Stewart Fraction, please show the different raises made from that level, what they contain now and what was seen in those that were driven after your connection with the Senator Stewart Mining Company as the work progressed?

A. There is a raise marked "Raise No. 6 West" upon the map; that merely indicates a raise; it does not purport to show the height of the raise. From this raise No. 6 west about 15 feet in vertical height above the old lower tunnel level is a drift on the vein extending eastward marked in purple, continuously on the vein to the stopes above the portion of the tunnel level marked "Drift 4 East". The raise marked "Raise No. 6 West" extends upward in the stopes; this was a rise that was put up for mining purposes. About the same distance above the tunnel level the ground has not been removed from the west side of this raise, but near the top it was all removed; the vein was poor in that portion of the ground between raise 6 west and No. 9 raise. Then, going along the vein beyong this shaft marked "Shaft No. 1" to raise No. 2 west—Raise No. 2 West was put up in the foot wall just beneath the stopes until
124 near the top, when it was turned upward to catch the vein probably 20 feet above the top of the stopes. After finding the vein the raise was extended about 15 feet along the vein, and meets the fault which cuts off the vein and terminates it on its upward course.

Q. Now, take that branch of the tunnel, lying south of the southerly side line of the Senator Stewart Fraction and describe what is seen in that portion of the workings and what has been driven from it?

A. I am not familiar with what was found a short distance above the level, but from the stopes which I have been through extending from approximately near Raise No. 2 West to the top of the raise marked "Raise No. 8" in which the vein is shown, it is inaccessible at present, but the vein is there and it shows ore, poor, and extending along the tops of the stopes to the place in the stopes near where it is marked "No. 7 Cut." There is shown the tops of the stopes which the vein *vein* terminated by the fault, which has a northerly course and dips westerly. The same condition is shown at the end of the stopes as we have them open up to the raise as indicated near the

southwest end of the tunnel, this old lower Stewart Tunnel;
125 the ground southwest of that has not been mined.

Q. What is shown in near the breast of the old Stewart tunnel near the southerly side line of the Senator Stewart and up in there, anything of importance?

A. There is a poor vein.

Q. What is shown in the raise that runs from the Senator Stewart tunnel, run from the 200 foot level of the Stewart mine, connecting with the old lower Stewart tunnel, and designated on the map as Raise No. 223 West?

A. It is extended on mineable ore from the 200 level of the Stewart Mine from a point near survey point 2073, upward to the old lower Stewart tunnel near survey point 9529.

Q. Your stoping will, of course, appear in the detail of the stoping exhibit when that is identified, and offered in evidence, but I will ask you if, taking the points that you have already designated on this exhibit where the vein has been worked and where you have proceeded to its top on the entire course of the vein, whether any projection has been made of the foot wall of the vein to determine the continuous line of the apex?

A. The portion from the west face of the Apex Drift to
126 Raise No. 2 West, that has been projected from the top of the stopes for a short distance; the stopes extend for the entire length.

Q. Has that projection been shown on any other exhibit to be offered?

A. It has been shown or is being shown; it is put upon the map, but I don't think the map is finished yet.

Q. That will be shown on another exhibit?

A. Yes, sir.

Q. Please state to the court whether or not the workings have progressed, the development done on this, with the projections of the foot wall in the mined portion of the vein where it appears to project and determine the true course of the Apex and its position with reference to the surface boundaries of the Senator Stewart Fraction claim?

A. I think there has been enough work done to show the entire apex. We have the point on the south side line where the top of the vein crosses; we have extended the stopes to the Apex Drift.

Q. Have you prepared another map now, that shows where you claim that that apex exists?

A. Yes, sir.

127 Q. Now, please indicate in a general way on the plan map, Exhibit 1, to the court, the course of that apex within the Senator Stewart Fraction boundaries from the point where it crosses those boundary lines?

A. The apex crosses the end line of the Senator Stewart Fraction claim near survey point 2528 a short distance north of that point, and extends in a northwesterly direction to a point near survey point 130 on the 200 foot level, northwesterly along to the eastern face of drift No. 105 east, thence to the tunnel level near survey point

25A, thence the apex drift, the face of it is now shown, along in the apex drift to its western face, thence southwesterly to the top of raise No. 2 west.

Q. What line does it cross at the top of raise No. 2 west?

A. At the top of raise No. 2 west it crosses the south side line of the Senator Stewart Fraction.

Q. What is the surface of the mountain at the point where this apex on its course turns from the northwesterly course as you go from the east end line and takes its southerly course or southwesterly course.

A. You mean to describe the contour of the mountain?

128 Q. Yes, in a general way?

A. The contour of the mountain is about the same line of our apex; it goes in a southwesterly direction from the level of the tunnel or apex drift, and about in the direction shown by my pointer, extending eastward in an eastern line, and crossing to the north side line of the Senator Stewart Fraction near the points 4 and 6.

Q. Does the mountain on its northerly slope or northwesterly slope go into any gulch that has a name of designation?

A. The mountain on its northwesterly and easterly side slopes in both directions. The eastern end line of the Senator Stewart Fraction is just on top of a hill, and the ground slopes in both directions, and on the eastern side it descends into Deadwood Gulch.

Q. And on the north?

A. On the north it slopes down into a gulch over south from the Senator Stewart tunnel, I don't know the name of it, Yellow Dog Gulch it is sometimes called, I believe.

Q. Where is the highest point of the mountain with reference to all of the workings that are shown on Exhibit 1?

129 A. The highest point of the mountain is the southernmost portion of the map, about the center of the south line of the map.

Q. And where is the highest portion with reference to the workings in the Senator Stewart Fraction?

A. About the center of the claim is the highest point, extending along the top of the ridge.

Q. About the center of the claim?

A. From the center of the claim; the mountain extends upward from the northeast corner of the claim to a point about the center of the claim, and then along the flat top of the ridge to the southeast corner.

Q. Now, you are following on the line of Senator Stewart Fraction, the easterly end line?

A. Yes, sir, the highest point is on the eastern end line.

Q. Now, in going from your northeast corner to your northwest corner, what is the course of that line?

A. About North 65 to North 70 west.

Q. What is the elevation of your northeast corner, compared to the elevation of your northwest corner?

A. It is somewhat higher than the northwest corner;

130 the northeast corner is somewhat higher than the northwest corner.

Q. Have you a map of that?

A. Yes, we have a map with the contour lines and all of that on it, which will be shown.

Q. How is the point of your apex immediately where this turn in the course of your vein occurs as it goes from the east to the northwest and turning, with reference to the elevation of your highest point or apex at the easterly end line, of the Senator Stewart Fraction?

A. You ask for the relative elevation?

Q. Yes?

A. There is approximately 400 feet difference in elevation. The point where the apex crosses the eastern end line of the Senator Stewart Fraction is approximately 400 feet below the apex drift.

Q. And how is the surface of the mountain at that point or between those points?

A. It is highest at the point where the apex crosses the eastern end line of the Senator Stewart Fraction, and descends toward the apex drift.

Q. And how is the elevation of the apex as shown here
131 on the northerly portion, with the apex as shown here in the raise at the southerly side line of the Senator Stewart Fraction?

A. That is a little lower, about 25 feet lower. The apex drift is about 25 feet lower than the apex as shown in raise No. 2 west.

Q. What dip has the vein from its apex as you have outlined it on this exhibit, from that apex and we will say between that apex and the old lower Stewart tunnel level?

A. It is approximately 45 degrees; it varies.

Q. What is the difference in elevation between your point at the apex as you have outlined it on this map, connecting with the end line, with the apex of the vein in the upraise 10 feet from the surface above the apex drift, and the ore bodies in the Ontario Mining Claim?

A. The ore bodies, the workings shown on the map are the Frank Drift, the May Drift, and the Gray Drift, which are upon the ore bodies in the Ontario, and are on a lower plane than any portion of the apex which I have described as extending from the east end line of the Senator Stewart Fraction, along the apex drift and to the top of Raise No. 2 west.

132 Q. Does the Stewart vein as it descends downward into the earth maintain a regular and uniform dip, or is it variable at different places?

A. It is variable at different places, and between different levels, within a small range.

Whereupon further hearing was adjourned until 2 P. M.

133 MONDAY, *January 6th*, 1913—2:00 o'clock p. m.

Trial resumed.

WILLIAM CLANCY, Resumed the stand for further

Direct examination (resumed).

By Mr. DINES:

Q. Mr. Clancy, you were asked about the plane of elevation of the apex as you have outlined it on exhibit 1 as compared to the plane of elevation of the ore bodies of the Ontario Mining Company. Have you the elevation in figures?

A. Not upon this exhibit.

Q. Have you them in any memoranda that you have with you now?

A. No; we have them on the cross sections which will be introduced later, but I remember the elevation or the approximate elevations.

Q. Well, if you can approximately state the difference in elevation of the line of apex that has been traced by you upon exhibit 1 and the ore bodies in the Ontario claim?

A. The elevation of the Silver King tunnel level or the
134 drifts which are marked Frank drift, May drift and Gray drift in the Ontario mine are approximately the same elevation as the elevation in green which is marked upon this exhibit as 400 level, which is from the datum plane which was used in all the elevations on the Stewart mines; 2,600 that is very near the elevation above sea level and the elevation of the apex drift is approximately three thousand.

Q And your difference in elevation then between the Ontario ore bodies and the apex would be what?

A. The difference between the elevation of the drift*st* in the Ontario mine and the apex drift would be approximately four hundred. I may have made a mistake this morning when I was asked about the apex which crosses the east end line; I was using the elevation on the four hundred at that time. If I did answer the question with that elevation, I should have made it probably sixty-five feet less elevation, that is, as it crosses the end line it is just above the three hundred level and not on the four hundred level.

Mr. DINES: We will ask your honor to permit the witness to make that correction in his testimony.

The COURT: Yes, sir; the correction will be noted.

135 Mr. DINES:

Q. You put the crossing of the end line on the Stewart tunnel level instead of above the Stewart tunnel level?

A. I think I used the elevation of the Stewart tunnel level when it should have been the 300 level, or approximately sixty-five or seventy feet higher.

Q. What do the lines marked in Roman notation, I, II and III and IV and V and VI on exhibit 1 indicate?

A. The lines as marked by the Roman numerals in red letters upon exhibit 1 represents the intersection of a vertical plane with the horizontal plane upon which the entire map is projected; that is, these are what we call lines of section. There are vertical planes pass through the ground intersecting the horizontal plane of these lines.

Q. Are the cross sections to which you have referred in the early part of your testimony cross sections made by planes projected along the lines referred to at their points of intersection with this map?

A. They are cross sections along these lines. Each cross section is all made looking westward; that is, when you were standing to the east and the vertical planes were passed, removing all downward, through the earth, removing all the portion of the
136 ground east of that plane, and you were looking upon the face as cut in that way.

Q. I will interrogate further on that when those are produced. Referring you to the level colored in blue, designated here by the pointer on the map and called—what designation is that? That is the Deering Crosscut clear through, is it? I will ask you if any portion of the vein is shown in that crosscut?

A. Yes; the crosscut is run underneath the commercial ore, but in that crosscut the quartzite is impregnated with mineral to a certain extent. This mineralization extends above the commercial ore, and that crosscut is entirely in part of the vein. The whole section of country from the drift on the map marked drift 5 east and drift 5 west, northward and westward, the portion of the map marked drift 4 east between the survey points in drift 4 east at No. 2090 and the point marked 9522, there is a fold in the vein.

Mr. GRAY: Won't you just point as you go along?

Mr. DINES: Just point as you go along so the numbers will be shown.

A. The portion of the mine in the eastern portion in the old lower Stewart tunnel as marked drift 5 east and drift 5 west, across
137 to the portion marked drift 4 east between survey points 2090 and survey point 9522, is in a fold of the vein. That drift 5 east and west is the same elevation or approximately the same elevation as drift 4 east. The vein is only a short ways above the elevation in the intermediate territory; that gives the appearance of a very wide vein there, whereas it is practically a horizontal vein in that particular portion.

Q. Now, from that portion down, what is the dip, that is, from the seam where that fold or waving condition of the vein that you refer to ceases on the most southerly point, what from that point on down is the dip of the vein?

A. In the eastern portion of the mine under drift 5 east downward the dip is approximately fifty degrees, from the tunnel level down to the 400 level. This only applies to a section of the vein, approximately 200 or 250 feet in length, that particular dip.

Q. Yes. What is the dip of the vein as it is shown in the top or terminal edge of it and in the raise above the apex drift?

A. About forty-five degrees in the raise.

Q. What is it in the stopes with which that raise connects?
138 A. The dip from the tops of the stopes through which raise 4 east is shown the dip is approximately forty degrees.

Q. What is the dip of the vein as shown at the point where the Osborne fault is encountered and where the vein lies up against the fault in the level immediately above raise 218 east?

A. The dip of the vein near the old lower Stewart tunnel level near survey point 2584 at the top of raise 218 east is approximately fifty-five degrees at that particular point.

Q. Have you made any estimate of what is the average dip of the vein from its apex into the Ontario workings, or will that be shown by your cross sections entirely.

A. I have not made any calculation as to the average dip from the apex into the Ontario workings, but we have cross section 1 which will show the inclination of the vein from the apex drift through the workings of the Stewart mine into the Frank ore body of the Ontario workings.

Q. I will ask you if, taking the extreme point or upper terminal edge of your vein as you have disclosed it within the lines of the Stewart Fraction, and going from that to the Ontario ore
139 body, if your course is—what is your course?

A. The course is downward from the apex of the vein into the Frank ore body of the Ontario workings, as will be shown on section one. The course is downward from any point along the apex, a line parallel to the east end line of the Senator Stewart and to the ore bodies of the Ontario.

Q. That is, you mean any point as it goes from its—you take it, if extreme east of the point here as it crosses the easterly end line of the plane and go on then in your northwesterly course until your point in the upraise, the course is as you have stated it?

A. In the Ontario we have no ore body developed in the plane of the east end line of the Senator Stewart Fraction.

Q. I will ask you again about that then. Take a point from the point where your apex crosses your easterly side line to the point where your lowest ore body is exposed——

The COURT: You say "your easterly side line."

Mr. DINES:

Q. East end line, to the point where your ore body is exposed, such as is known and developed, what is your dip?

A. To the lowest ore body?

Q. Yes, to the ore body that is known to exist—you say
140 it is not developed here in the Ontario in the end line?

A. No, sir.

Q. Take the ore body that is developed next to the end line, the last one that you have, what is the course there?

A. The Gray ore body as shown in the drift marked upon exhibit 1 as Gray drift, pass- a vertical plane parallel to the east end line of the Senator Stewart Fraction, and the course is downward from the apex into the Gray ore body.

Q. Go on to the northwestward and take your next point and project it down into the ore body of the Ontario?

A. You mean take the next section or take a series of points?

Q. Now, take the next section?

A. The next section is marked section four, or section six?

Q. Take section six; what is that?

A. Going from the point on the apex as shown in raise 218 east along the ore body to the ore body shown in the Ontario, the course is downward.

Q. Take your section IV, and from your apex point to that ore body, where is it?

A. The same as in section six. It is downward from the
141 apex as shown in the eastern face or near the eastern face of drift 105 east along the vein. The Ontario ore body of course is downward.

Q. And section V, the point where that ore body crosses the apex line and the point where it crosses your Ontario ore bodies, how is it?

A. In section five we have not developed the absolute apex, as we see ore in the top of the dip on the tunnel level marked drift 5 east near survey point 2571. Passing from that point, the last place we see the vein, and it is in the back on its upward course, going downward continually to the Frank ore body of the Ontario. This point 2571 which I have described has the ore showing above it in the back of the drift, is approximately sixty feet west of the point where we have the apex shown in drift 5 east.

Q. What is the next working level of your mine below the Stewart tunnel that is colored in blue, marked the old lower Stewart tunnel in blue, on exhibit 1—what is your next lower working?

A. The level marked on the map is 104 intermediate; is colored in green.

Q. That is the light green color, is it?

142 A. A light green.

Q. How is that intermediate level connected with your Stewart tunnel level?

A. As shown upon the map it is connected by raises; one raise marked 105 raise, and the other two raises are unmarked, but the 104 intermediate level has been connected continuously from the westernmost raise which is shown near survey point 9514 eastward to 105 raise by stopes; the entire ore body has been removed from 104 intermediate level to the tunnel level.

Q. Then that is no longer used as a working level, the intermediate level, and it has been stoped out from where; give the points, please, so his honor can tell from this map where the stoping out has been done. We will show that on the stope map, however, better.

A. Stoping has been continuous from a point near survey point 9971 westward to survey point 9978.

Q. Mark those points with your ruler, please?

A. Survey point 9972 westward to approximately survey point 9978; these sections shown in white have been stoped.

Q. Are the upraises to which you have referred connecting the 104 intermediate with the old Stewart lower tunnel level raises on ore?

143 A. Yes, sir; the raises are on mineable ore.

Q. What do they follow; do they show either wall?

A. 105 raise has the foot wall of the vein and pay ore, a pay streak in it, but I do not think the hanging wall shows there.

Q. And what does the next raise to the south show?

A. That raise was extended from the 104 intermediate on mineable ore to drift 4 west, old Stewart tunnel level.

Q. And the raise marked to the extreme south of 104 intermediate?

A. That was also driven on mineable ore to the old lower Stewart tunnel.

Q. Do those two last raises show the walls of the vein or either wall?

A. I am not positive as to whether the walls are shown in those raises or not; it has been some time since they were driven; and I know they were driven on commercial ore, but I am not positive as to the fact as to whether the walls are shown or not.

Q. What is the branch from the intermediate level colored in light green that runs between raise 100C, or near raise 100C?

144 A. That is a cross cut.

Q. And connecting with what?

A. Connecting the drift on the 104 intermediate level near survey point 9566 to the top of raise 100C, which is a raise from the 100 level up to the intermediate level.

Q. What is the distance from the intermediate level to the lower Stewart tunnel level?

A. A vertical distance of approximately forty feet.

Q. Do the stopes that you have referred to break into the level known as the lower Stewart tunnel level?

A. The stopes above the 104 intermediate which I have described break into the old lower Stewart tunnel level.

Q. Has the intermediate 104 level any other works on it than that shown on this exhibit, any extension or connections other than shown there?

A. Nothing on that elevation. There are stopes above it.

Q. What is the next lower working level?

A. I beg your pardon. There are stopes from the 100 level, on the same elevation as the intermediate, but they are not shown. They are shown on the stope map.

Q. They are shown on the stope map?

145 A. Yes, sir.

Q. What is the next working level below your Stewart tunnel level and below the 104 intermediate?

A. The 100 level?

Q. How is the 100 level marked on exhibit 1—what color?

A. It seems to be an orange. It is marked 100 level.

Q. It is marked 100 level?

A. There are various workings from it, drift 105 west, drift 105 east, west 105 crosscut.

Q. Are there any workings on that 100 level, any portions of it that are not shown on this exhibit?

A. None on the level, on the sill.

Q. What is the next working level below the 100 level, and how is that colored on the map, exhibit 1?

A. The 200 level; and that is colored in orange, marked 200 level.

Q. How is the Stewart tunnel level colored in blue connected with the one hundred level?

A. Connected by means of an incline shaft marked shaft No. 1 on exhibit 1.

Q. That is, this shaft here (indicating)?

146 A. Yes.

Q. Where is the 100 level connected with the 200 level?

A. The 100 level is connected with the 200 level by means of the shaft marked shaft No. 1 on exhibit 1; besides both levels are connected by stopes.

Q. I will have some other questions to ask as to that, but before going to that, I show you plaintiff's exhibit 2 designated "stope map of the Stewart mine, Stewart Mining Company, scale one inch, 30 feet," and ask you under whose direction and supervision that work was done?

A. It was done under my direction.

Q. What data were used in the preparation of that exhibit?

A. Surveys, levels and stopes as made by me.

Q. Did you furnish the data from your own surveys?

A. I did.

Q. Are you familiar with the location on the ground of the object that this exhibit 2 purports to represent?

A. I am.

147 Q. Have you examined this exhibit to know whether or not it checks with the data of your own observations and surveys or as the work progressed from time to time in the Stewart Mine?

A. I have. It does check. The only point I see the matter is that the stopes should be connected at the end of 104 intermediate with the tunnel level as shown on Exhibit 1 by the raise near survey point 9514 on the old Stewart tunnel level.

Q. Please mark with a pencil the connection that you refer to?

A. (Witness marked the map.)

Q. Now, are there any other points on that map or exhibit, other than the one that you have designated, that you think should be connected?

A. That is the only omission I see. I looked over this map very carefully and I did not notice that one, but otherwise, I think it is correct.

Q. I find here a working on Exhibit 2 marked "Apex Drift." Please state whether or not that is the same working which is shown on your plan map?

A. The Apex Drift on exhibit 1 is the same as the Apex
148 Drift on Exhibit 2.

Q. I notice from that point an upraise which is shown on this exhibit. Please state what upraise that is, if it is the same one you identified in connection with the Apex Drift in Exhibit 1?

A. The upraise shown from the apex drift on Exhibit 2 is the same raise as designated as raise No. 4 East on Exhibit 1.

Q. Now, when you were being examined in connection with Exhibit 1, you referred to certain stoping that had been done below the apex drift and from which that raise was driven. I will ask you to state what this designates in red?

A. The red portion of the map bounded by black lines is a representation of the stopes, as if you were placed an infinite distance above that, and were looking down upon that. The representation is on a horizontal plane; it is a plan map of the stopes.

Q. Does that apply to the red with the black border lines irregular in shape all over Exhibit 2?

A. It does.

Q. I see the blue lines beginning north of the northerly
149 side line of the Senator Stewart Fraction and going down with its branches, have no printed designation on Exhibit 2. Please state what that is with reference to Exhibit No. 1?

A. That is the old lower Stewart tunnel.

Mr. DINES: It is suggested, if the court please, that this map was not quite completed when it was sent here, and we wish before it is offered in evidence to make those corrections or completions, or rather, to complete the lettering?

The COURT: Leave is granted to complete the map.

Mr. DINES: We will do that, and we will offer it in evidence, and we ask leave to examine the witness upon it as if it were complete.

The COURT: You have leave to examine the witness and to illustrate his testimony by reference to that map.

Q. The blue that is shown here at the end of my ruler, immediately under the red stopes below the apex drift, is what?

A. The working which you have just described upon Exhibit 2, marked in blue below the apex drift is the same working
150 which is shown in blue on Exhibit No. 1, and marked "Drift No. 4 East," near the bottom of the raise marked, "Raise No. 4 East" on Exhibit 1.

Q. Now, Mr. Clancy, I will ask you, please, to take this Exhibit No. 2, and explain to the court in your own way and in your own language the extent of the stoping that is shown here; state upon what veins it is done, and show all the different points of connection between the different stopes that you can show upon the map or that you know to be in the ground. Start at your own point and take your own way?

A. All of the stoping that is shown upon this map, excepting the stoping which is shown approximately 100 feet north of the letter "S" in Senator of the title "Senator Stewart Fraction" and the stoping which is shown approximately south 100 feet of the

letter "S" in the word Senator in the title "Senator Stewart Fraction"—all the remainder of the stoping which is designated in black boundary lines and painted in red is upon the Stewart vein. Beginning at the easternmost and upper end of the stopes above the old Stewart tunnel level and going southwestward, the stoping was continuous above the old Stewart tunnel level almost to the
151 southern boundary of the Senator Stewart Claim. Below the old Stewart tunnel level there was some stopes shown above the 104 intermediate as marked on the map. Immediately below and westward of the point which — designate and have marked on the map "104 Intermediate" where the white space is shown, the ore has not been stoped out but remains there in place as shown by the raise extending from the stopes above the 200 foot level to the old lower Stewart tunnel level.

Q. When you describe this space, this is the space you are referring to?

A. That is the space, yes, sir.

Q. Will you kindly designate it on the map by reference or measurement so that it can be designated in the record; otherwise the record will not show to what particular portion of the map you refer?

A. The space that I am describing extends southeastward from the portion of the old lower Stewart tunnel that is covered by the name "Old Lower Stewart Tunnel" for a distance of approximately 140 feet along the course of the vein.

Q. And in what claim?

A. In the Senator Stewart claim. Beginning at the point
152 from which I started, the stopes from the apex drift, the stopes extend downward to the old lower Stewart tunnel level; then you pass through the portion of the vein that was not profitable into the stopes above the drift which is marked "Drift No. 5 East" and "Drift No. 5 West on Exhibit 1. The stopes are approximately 200 feet long and extend upward above the tunnel level for a vertical height of 20 feet. Stoping is then continuous below Drift No. 5 East and No. 5 West to the 400 foot level, and westward through the 104 intermediate into the stopes above the old lower Stewart tunnel level at a point which is marked "Survey Point No. 9514," on Exhibit No. 1. The southwestern boundary—a portion of the ground which has been stoped extends from the raise which is marked upon Exhibit No. 1 as raise No. 100C downward below to the 100 foot level and below the 100 foot level to the 200 foot level and downward to the stopes above the 300 foot level and down a raise which is on the vein, containing galena, into the drift on the 300 foot level. There has been no stoping above the drift which I designate with my pointer, and which begins on Plaintiff's Exhibit No. 1 at survey point 2567; there has been no
153 stoping done by the Stewart Mining Company on this drift, but the Gray stopes from the Ontario Mines extend upward to this drift, the 300 foot level of the Stewart Mine. Beginning at the top of the raise which is designated on Plaintiff's Exhibit 1 as Raise No. 223 West, going downward on commercial ore, there

has been stoping done for approximately 250 feet in length above the 200 foot level, about 35 feet in height above that level. Going downward from the 200 foot level through a raise which was driven upon commercial ore and designated upon Plaintiff's Exhibit No. 1 as Raise No. 328 West to the stopes above the 300 level. Stoping is now going on at the present time in these stopes. Thence downward to the 300 foot level along mineable ore from the 300 foot level into the stopes on the Frank ore body of the Ontario Mine. Thence downward——

Q. Before you get to that, how is the connection which you have designated as an upraise between drift No. 305 West and the Frank ore body designated on Exhibit 1?

A. The connection between the Frank Ore body and the drift marked upon Exhibit 1 as Drift 305 West is connected by a raise marked "Frank Raise No. 1." It connects with the 300 foot level of the Stewart Mine at a point approximately 30 feet south-
154 west of survey point 2112.

Q. Now, go ahead with your story and follow that down into the other stopes?

A. That raise which I have just described, which is marked on Plaintiff's Exhibit No. 1 as Frank Raise No. 1, is shown by parallel black lines upon Plaintiff's Exhibit 2. Both sides of this raise stoping has been done, and the ore bodies stoped out from the Frank drift to an elevation which is the same as the 300 foot level of the Stewart mines.

Q. Now, is the stoping in red shown in the Ontario Claim to the east of the stope which you have just described connected in any way with the last stope described and which you have called the Frank ore body?

A. It is connected with the Silver King tunnel level of the Ontario Mine by means of a crosscut.

Q. What are those workings on Exhibit 2, and also shown on Exhibit 1 coming from the most easterly stope in the Ontario up into the other workings?

A. The working shown in brown upon Plaintiff's Exhibit No. 2 is a drift along the vein on the 300 foot level as I have shown it. It is on the vein to the point where I am now pointing, which
155 is the bottom of raise No. 314 west, as shown on Plaintiff's Exhibit 1. Proceeding from that point the working is underneath the vein in the footwall, and proceeding as I am pointing with my pointer until we again encounter the vein near the point where the "3" of "300 Foot Level" appears, which is near survey point 2113 on Plaintiff's Exhibit No. 1. At that point the vein was encountered and drifted on and some stoping has been done above it. It is on continuous mineable ore to the stopes above the Frank ore body.

Q. In what way is the point from which you have come in tracing the connection between what is designated as the May and Gray ore bodies to the Frank ore body connected with any stoping above there in the Stewart Fraction?

A. Proceeding from the stopes above the Gray Drift on what is

known as the Gray ore body, throughout the raise and the stopes to the 300 foot level of the Stewart Mine; thence eastward along the drift to the bottom of Raise No. 314 West; thence on the vein and on ore up to the stopes on the Stewart vein above the 300 foot level of the Stewart mine. These stopes are continuous to the apex of the vein to the eastward and northward; the stopes are con-
156 tinuous from that raise.

Q. Now, is there any other connection on ore between the May and the Gray and the Frank ore bodies that are designated?

A. Proceeding from the stopes above the Frank Ore body, which is on the same stopes as the Gray and May ore bodies, upward to the 300 foot level of the Stewart Mine; thence eastward along the vein to the bottom of the Raise No. 314 West, upward in the stopes above the 300 foot level of the Stewart mine; thence upward through the stopes above the 200 foot level and on through the 100 foot level on continuous mineable ore through the stopes above the 104 intermediate level into the 104 intermediate level; thence along these stopes westward up into the old lower Stewart tunnel level and along the old Stewart tunnel level westward to the top of Raise No. 223 west; downward along mineable ore into the stopes above the 200 foot level of the Stewart Mine; thence downward through Raise 328 West on mineable ore into the stopes again of the 300 foot level and thence southwestward on the 300 foot level on up to the stopes of the Frank Ore body, which is on commercial ore down to the Frank drift. That is one connection between the ore
157 bodies. Another connection is——

Q. Now, you have finished one connection, have you?

A. Yes.

Q. Please state any other connection you have between those ore bodies on the veins?

A. Up from the Gray ore body upward through the stopes of the 300 foot level of the Stewart Mine; westward along the drift on the 300 foot level to raise No. 314 west; up raise 314 west to the 200 foot level; thence along the vein westward on the level to the stopes which are shown above the 200 foot level; thence through these stopes westward down to the 200 foot level, and down raise 328 west to the stopes above the 300 foot level, thence southward along the 300 foot level into the stopes above the Frank ore body and down to the stopes to the Frank drift.

Q. In tracing that connection, have you at any place departed from the vein?

A. No, sir.

Q. Do you notice a separation on Exhibit 2 between the space in the Ontario designated by you as the May and Gray ore bodies and the Frank ore body; what is the distance of that separa-
158 tion?

A. Between the May and the Frank it is approximately 100 feet.

Q. What is there in that portion of the territory, if anything, that accounts for the separation?

A. There is a fault which displaces the ore body and accounts for that separation.

Q. What is the throw of that fault or the measure of its displacement at that point?

A. Approximately 100 feet.

Q. Now, can you correlate or *di*entify that fault with that displacement, with the same fault at any other portion higher up in the vein, and if so, where?

A. We have found a fault which correlates with the fault which has been found upon the Silver King tunnel level of the Ontario Mine, on the 300 foot level of the Stewart Mine near survey point 2113.

Mr. GRAY: Just mark that so that we can see it, will you please?

A. Yes, sir. On Plaintiff's Exhibit No. 2 near the figure "3" in 300 of the title "300 Level." That fault extends upward to the 200 foot level of the Stewart Mine near survey point
159 2076.

Q. What is the extent of its displacement there?

A. At this time the displacement is approximately 30 feet in the same direction as found in the Ontario mine. Thence from this place upward in the stopes we have found the fault continuous as the stopes are driven out to it, and on the fourth floor or approximately 30 feet above the 200 foot level of the Stewart mine the fault showed no displacement, no breaking or severing of the vein.

Q. Could you locate where its position was at that point so as to identify with the fault that you have already referred to in the lower workings?

A. Yes, sir; there is a fault in the stope, and it is no doubt the same fault; it correlated in position.

Q. Point out on exhibit No. 2 the particular point in the workings of the Stewart mine where the effect of the fault as far as displacing the vein is no longer distinguished?

A. It is about 30 feet above the 200 foot level of the Stewart mine and the point is approximately 50 feet southwestward from the letter "R" in the word "Stewart" in the title "Senator Stewart Claim." The stopes which are shown, over which the letter
160 "R" and *T"T* are printed are underneath this fault, and the stopes shown southwestward are over or above the fault.

Q. Please state to the court whether or not you can go from the ore bodies in the Ontario Mining Claims that are in controversy here to the top or apex of the vein as you have designated it on Exhibit No. 1, on the vein, and show in how many ways you can go without getting off the vein, and as you describe the courses to which this question directs your attention, also call attention to the proportions of the courses that are covered by commercial ore that was actually stoped and shipped in the ordinary working operations of the mine?

A. Beginning in the Gray ore bodies as shown by the red, bounded by black lines, above the Gray drift on Plaintiff's Exhibit No. 2, which is the same drift as is marked Gray Drift on Plaintiff's Exhibit No. 1, this stope is commercial ore. Of course, going along

the drift on the 300 foot level of the Stewart Mine the vein was small, but continuous. Thence upward through raise 314 west for a distance which projects horizontally about 60 feet, the vein was small. The ore, I say—the vein was small, but the com-
161 mercial ore was small, about six inches to a foot of good galena, but that was not commercial in quantity. It was commercial in quality. Into the stopes which are shown upon this map—well, these stopes of course were commercial, so it has been stoped; thence eastward through the stopes above the 300 foot level of the Stewart Mine to the 200 foot level, the white portion on the map has not been stoped, but is on the vein and in commercial ore. Up through the stopes as I am designating by my pointer to the 200 foot level, thence eastward to the apex. There are an infinite number of points from the 300 foot level up the edge of the stopes that you can go or could have gone at one time up the stopes all the way. Beginning from the Gray ore body, up the same route to the 300 foot level westward, and through the raise 314 that I spoke of; thence to the 200 foot level, thence to the 100 foot level and upward to the tunnel level through the stopes to the drifts marked "5 East" and *and* "5 West" on Plaintiff's Exhibit 1, to the stopes above these drifts which are marked "Drifts No. 5 East and No. 5 West" on Plaintiff's Exhibit 1, and there we meet the fold in the vein which I have before described; downward
162 through the raise which is on the vein, but the ore is not commercial; that raise is marked No. 3 East on Plaintiff's Exhibit No. 1; thence in the Stewart tunnel level and along ore for a short distance which is not profitable to mine; there is some ore in that crosscut which is marked "East No. 3 Crosscut," which is commercial, but I cannot designate just the exact proportion that is or is not—and into the wide blue space which is designated. This entire space was occupied by commercial ore at one time, which has since been removed. Thence upward through the stopes to the top of the stopes above drift No. 4 East and on the vein the foot-wall of the vein in raise No. 4 East to the point 10 feet below the surface where the apex of the vein is found. Then from the Frank ore body beneath the Frank drift of the Ontario mine, upward through the stopes to the 300 foot level of the Stewart mine; thence along mineable ore to the stopes above the 300 foot level of the Stewart mine; thence through the drift on the 300 foot level——

Q. Please designate that drift?

A. That drift is described on Plaintiff's Exhibit No. 1 as drift No. 305 West, and the particular portion through which I
163 am passing through the Frank ore body to the stopes above the 300 foot level is between survey points 2120 and 2111. From the stopes above the 300 foot level through raise No. 328 west upward to the 200 foot level near survey point 2097 on Plaintiff's Exhibit 1; thence upward through the stopes above the 200 foot level through raise 223 to the Stewart tunnel; thence along the tunnel or through the stopes eastward to the apex drift. There are an infinite

number of points from the south side line of the Senator Stewart Fraction to the apex drift that you can find on your upward course.

Q. Why do you call the line that you have identified the top of apex of the vein?

A. At any point along the apex as we have designated it we cannot go upward on the vein on its true dip; downward we can go on the vein, but not upward. That fixes it as the top.

Q. Please describe to the court the workings in the Ontario shown on Exhibit 1, and Exhibit 2, and state how the ore bodies are opened in the Ontario, by whom they were opened, and when?

A. The drift crosscuts and tunnels as found on the Silver
164 King tunnel level of the Ontario mine are shown on Plaintiff's Exhibit No. 1, marked Silver King tunnels, Gray drifts, May drift, Frank drift, Gray raise, Frank No. 1 raise, Frank No. 2 raise, and Ontario shaft, and the level which is shown in red, but which is not marked, which is approximately 100 feet lower than the level on which the Gray drift appears, are the workings of the Ontario mine. The Silver King tunnel was driven to a point approximately 20 feet beyond where the 200 foot level of the Stewart mine is shown as crossing it above, before I came to the Stewart mine, in the latter part of 1911, by the Ontario Mining Company—I presume it was the Ontario Mining Company; they ran a crosscut or an extension of the Silver King tunnel in a southeasterly direction, which I am following with my pointer, for a distance of approximately 450 feet, and encountered the vein at the point in this crosscut where the Gray is shown as intersecting the crosscut just described. The vein was followed for a distance of approximately 300 feet. Then a crosscut northwestward encountered the ore body on which the May drift was driven in about 20 feet. Thence the crosscut northwestward from the May approximately 100 feet to
165 the Frank drift. I don't know just when the workings were done, but sometime since the latter part of 1911. This work was prosecuted continuously.

Q. When was the Stewart vein cut by the workings in the Ontario with reference to the time that the stoping from the Stewart vein was done in the Senator Stewart Fraction?

A. The stoping in the Senator Stewart Fraction has continued for about two years, and the work was done in the Ontario since the latter part of 1911, that is, since probably December, 1911; I think it was either November or December, 1911, when they were working in the Gray drift; the latter part of 1911 at least, and the stoping has been continuous, and they are still stoping in the Senator Stewart Fraction above the 300 foot level.

Q. What is the character of the mineralization or the ore that is found in the ore bodies in the Ontario Mining Claim which you have identified?

A. The character of the Ontario ore bodies is identical with that of the Stewart ore bodies. The vein where it is commercial ore, is composed of galena, carrying lead and silver.

Q. What is the character of the ore in what is known as
166 the Frank ore bodies?

A. It is the same.

Q. Is there any difference that you ever found in any of the structural features of the veins that you have examined in the Ontario mine and the vein that you have been working on in the Senator Stewart Fraction?

A. There is no difference whatever between the veins; they are the same vein; it is the same vein, there is no question.

Q. What is the country rock surrounding the vein as disclosed in the Ontario Claim?

A. Quartzite.

Q. Referring to your Exhibit No. 2, Mr. Clancy, there are ore bodies shown to have been stoped west of the end line projected of the Senator Stewart Fraction. From what level was that stoping done?

A. From the 400 foot level or Fir tunnel level, marked on Plaintiff's Exhibit No. 1 as the 400 foot level.

Q. And in what claim is that stoping that is shown on Exhibit No. 2, within the boundaries of what mining claim?

A. The stoping to which I presume you refer is within the Lazy Jean and the Switchback claims.

167 Q. Now, in the Ontario at the northerly portion, right back of the stope on what is known as the Frank ore body, there are some stopes there along to the west, immediately to the west or northwest of the Ontario mine. Who did that stoping?

A. The Stewart Mining Company did the stoping which I designate with my pointer, which is near the northeast corner of the Silver Casket Claim shown on Plaintiff's Exhibit No. 2.

Q. How was the connection made and by whom was it made between the vein in the Ontario and the vein in the Senator Stewart?

A. The Stewart Mining Company drove southward from survey point No. 2113 on the vein.

Q. On what level?

A. On the 300 foot level in mineable ore, and proceeded to stope above it. Afterwards the Ontario Mining Company stoped upward on the vein and holed into the 300 foot level of the Stewart Mine.

Q. I call your attention, Mr. Clancy, in the midst of the red space which you have identified here as the representation of the stopes as they have been made from time to time within the

168 workings of the Stewart Mine, and particularly I call your attention to a white space immediately south of raise No. 312 East as designated on Exhibit 1, which is shown but not designated on Exhibit 1, which is shown but not designated by any figured or letters on Exhibit 2. Please state what that white space contains?

A. It contains ore; the section of ground was mined, as shown in red, designated by my pointer, approximately between survey points 2008 on the 300 foot level of the Stewart Mine and survey point 2028, point 2028 being about the eastern extremity of the section as mined. The faces of those stopes are still in ore; the portion which I designate now is not profitable and they left a little pillar but the eastward and westward from this raise is mineable ore which will be mined. The stopes are now being prosecuted from the 400 foot level upward right in this section of ground.

Q. What is that white space between the raise along the east end line of the Stewart Fraction and to the north of the raise which I last called attention to, what is in that?

A. The larger portion of that space will be mined; that is, draw a line from the easternmost extension of the 200 foot level
169 down to the easternmost extension of the stopes above the 300 foot level will be the portion which will probably be mined. At that point we find the upper termination of the vein, and it will be quartzite above that.

Q. What did you have in the white space that you showed here immediately above the stopes and to the south of the 100 foot level on the eastern portion of the Senator Stewart Fraction and almost directly beneath the breast of that drift southeast from the Stewart tunnel level?

A. For about 40 feet south of survey point 9940 in drift No. 105 East is shown a white space on Plaintiff's Exhibit No. 2. In that space is the Stewart vein, but a portion of it was unprofitable. The vein was there, but it did not pay to remove it.

Q. And in the white space that is shown immediately above the southerly side line of the Senator Stewart Fraction and bounded on the north by the bottom of the other stopes, through which rise 400C I believe passes, what is that?

A. For a space of 60 feet south of survey point 2015 on the 200 foot level on Exhibit 1 is shown a white space on Exhibit 2.
170 In this space is the Stewart vein on which stoping is now being prosecuted.

Q. You mean now, at the present time?

A. At the present time; the stoping is being extended right now, to meet the section to the eastward, which has been mined.

Q. What level is being now used as the working level to stope into that vein?

A. We are mining the ore from the 300 foot level and transferring it to the 400, and thence it is taken out by a train cut through the tunnel.

Q. What is there in the space that is still left in white along the westerly line of the Lazy Jean and above the 200 foot level and south of the easterly portion of the southern side line of the Senator Stewart Fraction?

A. From a distance of approximately 160 feet south of the northeast corner of the Senator Stewart Claim, along the east end line of the Senator Stewart Claim, is shown a white space on Exhibit No. 2. Most of this space is known to be mineable ore, which will eventually be taken out. The ore was left there, because if the ore is mined, it is impossible to hold the drifts and it is to permit the other portions which still remain to be stoped.

Q. Now, as you go on further to the south and below that
171 point, you come to another white space which is bounded on one side by the 100 foot level marked on Exhibit 2, the 200 foot level, and between those two levels it is represented in white; what is there?

A. In the eastern face of the stopes which are shown above the 200

foot level of the Stewart Mine on Exhibit 2, in which the letters "R" and "T" of the word "Stewart" in the title, Senator Stewart, appear, the vein is of unprofitable quantity. There is some galena in the vein, probably six inches; it is not profitable to remove it, and in the stopes from the 200 foot level as shown to the eastward of this, the face is also unprofitable, so for that reason there has been no stoping done in that space.

Q. Is that on account of the smallness of the seam or a lack of quality of the ore?

A. No, the quality remains the same, but the quantity of galena is insufficient. The vein is small. It can now be seen in the easternmost face of the stope I have just described. The vein is there and can be seen, but it is small.

Q. How does it show on this portion of the 100 foot level; when that was driven was the vein there?

172 A. The vein is there, but it is lean.

Q. How is it on the 200?

A. It shows there, at the portion where it crosses the Silver King tunnel, there is galena shown at the top of raise No. 314 west, where it intersects the 200 foot level. All along that portion it is shown as white above the 200 foot level, it is lean.

Q. Immediately below the line of the Silver King tunnel on Exhibit 2 there is a small white space adjoining your red stopes; what is in that?

A. The same condition as I have described obtains from the southwestern face of the stope below the 100 foot level and below the letter "L" in "Lever" on the west end of the 100 foot level; the stopes where the letters "RT" of the word "Stewart" of the title Senator Stewart are seen.

Q. Is there a lean place in the vein there; is that what you designated?

A. Yes, we found it lean in the drifts and lean in the face of the stopes and therefore it has not been removed.

Q. Going on further to the south we find the white space in the stoping that is shown south of the Silver King tunnel in the

173 Senator Stewart claim. What is the condition there? I believe you already described that; that is where the fault is?

A. That is where the fault, which is shown in the Ontario Mine, separates the ore bodies on the 200 foot level. There is no vein to be mined in the space shown as white.

Q. So that that faulting in that space, this irregular shaped space between the 300 foot level and the 200 foot level in the southeastern portion of the Senator Stewart, what have you to say about that?

A. A portion of that ground in all probability will be mined; a part of it will not be mined, as we will have a width of something over 100 feet between the stopes on the Gray ore body and the stopes on the Frank ore body on the Ontario level, and that width will gradually decrease until, as shown above the 200 foot level and on the 200 foot level it is only a width of something over 40 feet. That is a V-shaped white space which will appear on this map if the stoping were all complete.

Q. How about this space in the Ontario Mine here between the May and the Gray stopes and the northwestern end line of the Ontario?

174 A. A part of that will probably be stoped, and part of it will not. A portion of that ground falls within the V-shaped space which I have already described.

Q. How about the white space in here immediately south of your apex drift in the Senator Stewart Fraction claim and towards the center of the claim, where the white appears; what is the condition as to that?

A. There is ore, which in my opinion will be mined westward from the crosscut which is designated on exhibit 1 as East No. 3 Crosscut, and opposite the raise which is marked our No. 3 raise. Of course the exact extent of the commercial ore is impossible to know until the work is done but there is ore to be seen there, and no doubt it will be extracted. The vein is found and commercial ore is in sight.

Q. Now, Mr. Clancy, what do these black lines represent which seem to bound portions of the red, running right through the stopes as designated on Exhibit 2?

A. The black lines which are shown on Exhibit 2 are the boundaries of the actual openings in the stopes on the hanging wall side.

175 I do not mean to say that that is the hanging wall of the vein, but that is the boundary of the stope on the hanging wall side; that is, the vein is dipping in a southeasterly direction, and looking down upon it, the lines are just like a terrace wall, and you can see the hanging wall side and you cannot see the footwall side, and these lines represent the hanging wall side of the floor of the stope.

Q. And that is the form in which that was actually stoped and taken out in the ordinary development of your property and the mining of its ores, was it?

A. It was; it is all just like a flight of stairs, the steps one after another, up on the vein.

176 Q. Mr. Clancy, I call your attention to an exhibit upon which is written "surface map, Stewart Mine, Stewart Mining Company, Kellogg, Idaho; scale, one inch, thirty feet," which the stenographer has identified as plaintiff's exhibit No. 3, and ask you if you are familiar with that exhibit?

A. I am.

Q. Under whose direction was it prepared?

A. It was prepared under my direction?

Q. From what data did you prepare it?

A. From notes and surveys taken in the stopes and levels of the Stewart Mine.

Q. Did you make these surveys from your own observation, or have some assistant with you when that was done?

A. I had my assistant with me in making surveys.

Q. Who made the notes of the original surveys from which the data was taken?

A. Are you speaking of the entire map?

Q. Yes, I am speaking now of all the data that was used for the purpose of putting these different objects upon the map?

A. I have surveyed the entire surface, obtaining the loca-
177 tion and elevation of a great many points covering the entire surface which is shown upon this map. My assistant afterwards obtained a great many more elevations from which the contours were located.

Q. Was that done under your direction and the supervision of your department?

A. It was; and I had an absolute sketch of his work by checking on my points which I had surveyed myself, so I know from that that the map is correct.

Q. Now, please state whether or not then you are able to state from your own observation and surveys and from such assistance as was reported to you and checked in connection with it, whether or not that exhibit 3 correctly represents the different objects which are noted upon it?

A. It does.

Q. What are the lines irregular in course beginning at the northern portion of the map and extending down in length and coming around the different curves that I indicate on this exhibit?

A. The curves shown in brown and numbered from 2950, 2975 and so on from 25 up to 3650 are contour lines. Each line repre-
178 sents the line which the water level would take if the whole country were filled with water up to that elevation; that is, each line shows—all points upon each line are the same elevation.

Q. That is, if I identify a line here as it crosses the east end line of the Senator Stewart Fraction with the same line as it crosses the southerly side line, I know that the point of intersection of those boundaries are the same elevation, is that correct

A. Yes, sir, that is correct.

Q. Does that apply to the contours beneath the Ontario and the Senator Stewart, the Lazy Jean and Switchback?

A. Yes, sir, it applies to the entire map, all the contour lines shown upon it.

Q. I find designated upon this exhibit a red line crossing the easterly end line of the Senator Stewart Fraction and going along in a northwesterly course and then curving until it finally takes a southwesterly course and down to the southerly side line of the Senator Stewart Fraction. Please state what that line designates?

A. It represents the apex or succession of the points as we have developed them along the top of the vein in the Senator Stewart Fraction.

179 Q. How did you get the line from one point to another, for instance, you would take the point where you actually had the top shown in the upraise ten feet from the surface and the other points where you had the top exposed lying against the face of the Osborne fault, how did you get the line between so as to make the different points, not all of the points of apex having been shown by actual development?

A. Referring to plaintiff's exhibit 1, we have the apex shown on the south side line of the Senator Stewart Fraction at the top of raise marked raise No. 2. We also have the apex shown in the west end, the drift marked apex drift near survey point 2532; we also have the apex shown near the top of raise on exhibit 1, marked raise 4 E.; we also have a point—determined a point on the apex, on the apex drift, where the Osborne fault is shown on the north side of the apex drift. On the old lower Stewart tunnel the top of raise 218 east near survey point 2518 we have another point on the apex following down raise 218 east to the 100 foot level; we have a point on the apex at the 100 foot level, also in the 200 foot level, thence going down from the 200 foot level down raise 314 east to the point where we find the top of the vein in raise 314 east. We find another
180 point in the apex; we go down raise 314 east into the vein, thence eastward along the 300 level to a point a short ways east of survey point 2528 and find another point in the apex. That in connection with our stopes as showing the position of the vein enabled us to connect up the apex as shown upon plaintiff's exhibit 3.

Q. Please state to the court whether or not the apex line as shown on plaintiff's exhibit 3 correctly represents the location of that apex within the lines of the Senator Stewart Fraction?

A. It does.

Mr. DINES: We offer exhibit 3 in evidence, your honor.

The COURT: It will be accepted.

The said map was thereupon marked Plaintiff's Exhibit No. 3 admitted.

Mr. DINES: Q. How far are the walls of the vein as they are disclosed in the vein of the apex drift beneath the surface of the ground?

A. In the apex drift?

Q. Yes, sir.

A. They are at varying heights, from the foot wall of the vein as exposed in the apex drift near point 2117, approximately
181 25 feet below the surface, but the hill going upward at that point, the apex drift increases in depth below the surface, so the height varies.

Q. I will ask you if you can from your contours that you have given here now accurately determine from the elevations the difference in elevations from your points along the line of this apex and the difference in elevation of the point at which the line of that apex crosses the east end line of the Senator Stewart Fraction claim?

A. There is no date on this map that I can do that.

Q. I would like to have you, Mr. Clancy, take the elevation of the exact point that your apex crosses the easterly end line of the Senator Stewart Fraction mining claim and the apex at the highest point that it has been developed up here at the point of this curve and mark it on exhibit 1 so that the court and all of us can know that elevation?

A. Mark the elevation of the apex that crosses the east end line?

Mr. DINES: I find, your honor, that the elevation- of these points have not been put on this map, and I wish to have them put on,

and I suppose the gentlemen on the other side will not object
182 to those elevations being shown.

Mr. GRAY: You can put anything on you want to.

A. Shall I mark the elevations on exhibit 1?

Mr. DINES:

Q. Get those elevations and mark them on the map.

The COURT: Yes; you can mark them right on the map.

Mr. DINES:

Q. If you have not the data for this, you can get it and put it on later.

A. (Witness marked map:) I have got them near enough for all practical purposes; it is very close.

Q. I would like to have it accurate.

A. How nearly do you want them?

Q. Have you got any data from which you can get it accurately?

A. I do not know what you mean—accurately. That is accurately.

Q. How close?

A. It is within five feet.

Q. I think that is reasonably accurate myself. What are the elevations that you have put on there?

A. The elevation of the apex as disclosed in raise 4 east, elevation of 3025. The elevation of the apex as it crosses the east
183 end line of the Senator Stewart Fraction, elevation 2672.

Q. Do you know what angle the Stewart vein upon which the mining operations of the Stewart Mining Company have been carried on in the Senator Stewart Fraction claim makes with the Osborne fault on its strike?

A. The angle which the Stewart vein makes with the Osborne fault on its strike as developed in the mine for a distance of 120 feet away from the fault is twenty to thirty degrees, about twenty-five degrees. Now, that angle is constantly varying. The further away from the fault you get the larger the angle. As you approach the fault, for instance, on the 100 level, there is mineable ore a distance of 100 feet right on the same strike as the fault.

Q. What is the angle of declination of your apex as it comes from near the center of the Senator Stewart Fraction and crosses the easterly side line of that claim?

A. That angle is approximately thirty degrees. Do you wish me to figure it from the elevations which I have there?

Q. Yes, sir, if you can get it, I would like to have it as accurately as you can get it. If you are not prepared to make that now,
184 you can bring it in tomorrow morning.

A. I will figure it and mark it on exhibit No. 3.

Q. Yes, sir, I will ask you to do that.

Mr. DINES: Your honor, we have some cross sections that will have to be identified by this witness. He has done the work and had them made, but they are not quite ready. The exhibits which represent them are not quite ready, and we will ask to reserve the right when they are ready tomorrow morning to identify them by him, and then

with the corrections put on exhibit 2 and the additional matter on exhibit 1 reserved, we offer the witness to the other side.

Cross-examination.

By Mr. GRAY:

Q. Mr. Clancy, you have spoken of the Osborne fault. By that term what do you mean?

A. By the term Osborne fault as applied to the workings which I have described I mean the fault against the south face on which the Stewart vein terminates on its upward course. It was called Osborne fault because that is the name which the fault which occupies the location which corresponds to this fault is known
185 in this district.

Q. A well known and generally recognized fault, the throw of which is very great?

A. This fault has a very great throw, and the Osborne fault is well known.

Q. It is a normal fault, isn't it?

A. It is from all I know and have heard about it.

Q. Yes. In other words, the hanging wall has dropped down, the rock on the hanging wall side of the fault has dropped down?

A. Either the hanging wall has dropped down or the foot wall has gone up; the relative movement is the same.

Q. What you call the apex of this vein, the northerly apex, is in fact a termination of the Stewart vein against the Osborne fault?

A. It is the termination of the Stewart vein in its upward course against the south face of the Osborne fault.

Q. Now, if you will just answer my questions without adding anything to them, we will get along faster. It is, whether on its upward or onward or other course, it is the termination of the vein against the Osborne fault, is it not?

186 A. It is the termination of the vein against the Osborne fault as I described it.

Q. The vein is older than the fault, in your judgment?

A. I don't know whether the fault was cut off by the vein or whether the fissure was made and the vein was filled afterwards or much about that part of it; I know the actual conditions as they exist in the ground.

Q. Yes, sir; it is your opinion, isn't it, that the vein was faulted by the Osborne fault, isn't it?

A. It probably was. That seems to be the opinion of men who are posted on matters of that kind better than I am.

Q. I am willing to take your judgment, Mr. Clancy?

A. I will take their judgment.

Q. And in all probability before that fault the vein extended indefinitely or out some distance in a northerly direction from the present termination of it against that fault in your judgment?

A. Assuming that your hypothesis is correct, the fault had a large displacement of several thousand feet, the vein was not in that section of the country before the faulting.

Q. I do not want you to assume my hypothesis; take your
187 own; what is your judgment, and answer the question upon your own judgment?

A. You asked if the vein extended northerly——

Q. In the Burke quartzite—this is in the Burke quartzite, isn't it considered so?

A. Yes, sir.

Q. In the Burke quartzite, in the beds that lie opposite the present beds which enclose this vein, in your judgment within that rock that vein extends in a direction beyond its present termination against the Osborne fault, isn't that true?

A. No.

Q. You think that the—well, go on and explain that answer.

A. Presuming that this vein existed in the position which it now occupies and extended onwards beyond the Osborne fault, which is not true.

Q. Beyond the point where the Osborne fault now is you think that that has always been the termination of the vein along that line, do you?

A. On the presumption that the Osborne fault——

Q. No, answer that question Yes or No, and then you
188 may explain?

A. (Continuing)—the vein did not occupy the position in this country at all, it was further to the east, this part that did the moving, if the hanging wall came down in the Osborne fault.

Q. Yes, sir; now then, do you think that there was any portion of the vein which lay beyond the line of the Osborne fault?

A. I don't know; there is no way to tell anything about it.

Q. There is no way to tell anything about it; well, what is your judgment?

A. My judgment is that before the Osborne fault occurred in the country, which the facts are, in the vague past nobody knows anything about it, you are simply theorizing when you are talking about it in the first place.

Q. Yes, sir.

A. The Osborne Fault dropped the northern part of this country which is shown by the workings of the Stewart mine and terminated against the Osborne fault and it slid down opposite the Pritchard formation, that is, at one time the movement was south-
westward, that is, at one time this whole country lay further
189 to the east. As to the lateral movement, I never heard it discussed, don't know anything about it myself, I don't know whether any body else does or not, there may have been a lateral movement and there may not have been, but if such a condition did exist here, the present condition was not to be found, and there never was any extension of it even on that hypothesis, and the vein went through the fault in its present position.

Q. Mr. Clancy, you have given as the western apex of the vein the termination of the vein against another fault?

A. Yes, sir.

Q. Have you attempted to determine in any manner the throw of that fault?

A. Yes, sir.

Q. Where? What investigation have you made of that question?

A. The place upon the map, plaintiff's exhibit 1, marked No. 7 raise, which extends to the top of the stope above the old lower Stewart tunnel in its western portion, in the neighborhood of where the word "Senator Stewart" appears on plaintiff's exhibit 1, I find the vein was terminated on its upward course by this fault
190 which you have spoken of. We run a crosscut into the foot wall, marked upon plaintiff's exhibit 1 as No. 7 cut. That crosscut was extended for a distance of approximately 150 feet into the foot wall without finding anything but the broken country and no trace of a vein. On the opposite side the crosscut had been driven from the workings, from the upper Stewart tunnel, showing also a broken or faulted condition which gave a wide area of broken up country, but we could not make any connection between—find no continuation of the vein beyond that fault.

Q. Were those on the same level, the number 7 and the 85 level.

A. The No. 7 is about forty feet above the 85, but it would have connected with a vertical raise which is in the end of the 85 level.

Q. The Stewart property has been worked as a whole, that is, the Senator Stewart Fraction and the Senator Stewart claims have been worked as one mine?

A. It has.

Q. And the first work there was from the upper Stewart tunnel which you have shown upon your map; that is the first work there from which any actual mining operations were conducted, is
191 that true, or do you know?

A. I don't know from my own experience, but I presume it was. That working was driven before I arrived at the Stewart.

Q. And ore was extracted through that tunnel from over here in the Senator Stewart claim (indicating)?

A. There are some stopes shown above.

Q. Where are they over here on this map?

A. They are not shown upon this map.

Q. Why didn't you put them upon that map?

A. Because I have no record of it; you can simply see the openings, and you have no way to get into them.

Q. Was there not any stope map kept at that time which was handed to you by your predecessor?

A. No, sir; I have no record whatever of any stoping of that working; I presume from what I know of the workings that that stoping was probably done before the present management of the Stewart Mining Company took control of it.

Q. And you have no maps showing that?

A. We have workings there which are called the Samuels raise, and I presume all that work was done by Mr. Samuels when
192 he owned the property.

Q. There is no map showing that stoping?

A. Showing the stoping, no, there is not.

Q. The work over here on the Senator Stewart Fraction which you have there as the thirty-five level, that was done by the Stewart company?

A. That was done previous to my arrival at the Stewart mine, but the works to some extent are still accessible.

Q. These works are not accessible over here?

A. These works are accessible as shown there, but the stopes are not. The full extent of the stopes are not shown.

Q. The property when you first went to work there was being opened up and developed through the Stewart tunnel, the main working tunnel there, and drifts on that level and the shaft sunk from that level, isn't that correct?

A. That is true.

Q. The Stewart tunnel appears to penetrate the vein in two places, one way by the Deering Crosscut and another around to the south of the Deering crosscut, is that correct?

A. Yes.

Q. Where was that vein first opened up by the miners in
193 the development of the property on that level?

A. I don't know; it was done before I arrived at the Stewart mine.

Q. You don't know whether the Deering crosscut was driven before or after the vein had been opened up upon that level?

A. No, not to my knowledge, I don't know anything about the way the work was done there; that was all done before I arrived here, or arrived at the Stewart mine.

Q. Did they keep progress maps which show?

A. As I stated before, I have no record—when I came to the Stewart mine we had a plan map showing the extent of the workings. As to the sequence in which they were driven I have no record.

Q. The Deering crosscut had been driven when you arrived?

A. Yes, sir.

Q. From the work which has been done up there on that eighty-five level, in the No. 6 crosscut, is it, that you refer to?

A. No. 7 cut as it is marked upon plaintiff's exhibit 1.

Q. Yes, sir. What is the throw at that point?

A. I don't know.

194 Q. Now way of determining?

A. We have been unable to find the vein above the fault which cuts off the vein above the old lower Stewart tunnel level.

Q. You find it up in here in these workings, don't you?

A. I don't know but that is the same vein or not.

Q. You know there is a vein there?

A. We do.

Q. Yes, sir; and you know there is one down here?

A. We do.

Q. The drift on the Stewart tunnel level at the time you went there had been extended how far to the south?

A. In a westerly direction to its present face, only a short distance of the south side line of the Senator Stewart claim.

Q. What is the top of this map?

A. What is the top of it?
Q. Yes, sir;—north?
A. You mean the direction? Yes, sir, north.
Q. Why do you mark this as the west drift when north is up here and west over there.
A. North is up here and west is over there, where would
195 you mark it north?
Q. Where is west?
A. There is north and there is east and west and there is south.
Q. You have this marked west from the shaft?
A. Most of the workings——
Q. Just answer this question, with reference to the Stewart tunnel level?
A. Because we use an arbitrary name to give those drifts a number so that we would know them.
Q. Yes, sir, all right. How far in a northerly direction had that drift extended at that time, that level, at the time you first went there?
A. The particular drift which you were describing?
Q. Yes, sir.
A. To the intersection of the Deering crosscut and the Stewart vein marked on plaintiff's exhibit 1 as survey point 9962.
Q. And continuously from that point to its southern face it was within the vein, followed the vein?
A. I have reason to believe that it followed the vein from raises that go up and the stopes on which I followed it continuously
196 through on the vein, and from the points which I have seen the vein in this drift.
Q. And ore was stoped above that level as far as there was commercial ore?
A. Yes.
Q. Yes, sir. Now then, what is the elevation of the point which you have marked there—what is that number—9962; what is the elevation at that point?
A. Something over twenty-nine hundred.
Q. Give it to me accurately?
A. It is not upon that map, but it is approximately 2912.
Q. Haven't you some data.
A. Not upon these maps. I can get you that, though.
Q. I wish you would.
A. No, I have nothing here.
Q. What was the elevation of the southern face of that?
A. Approximately the same elevation as point 9962.

Mr. DINES: Mr. Gray, we will have the elevations put on that map this evening so that you can take up that branch of it in the morning. It was an oversight.
Mr. GRAY: All right.

197 Q. Had the 104 intermediate drift been driven at that time?
A. Only the crosscut which is shown from raise marked R. 100C upon plaintiff's exhibit 1 to point 9566.

Q. The level had been run?

A. The drifts from this crosscut had not been run at that time.

Q. Now then, how far down was the shaft at that time, Mr. Clancy?

A. Down to the 200 foot level, and a short sump below that.

Q. Had the 100 foot level been run at that time?

A. The crosscut south from shaft marked upon plaintiff's exhibit 1 as shaft No. 1 was driven south and crosscut north from shaft and drift east and west marked drift 105 east and west was driven.

Q. Had the level been extended from the crosscut?

A. Drift 105 east has been extended since my arrival there.

Q. And the 200 has practically all been done since your arrival there?

A. No, part of the 200 was driven before my arrival there,
198 and part of that has been extended some since.

Q. Practically all the mining, though, has been done since your arrival there?

A. Yes, sir, practically all the mining.

Q. And practically all the mining on the one hundred?

A. Well, I would say about half the mining on the one hundred.

Q. You have said that the point 9962 and the south face of that Stewart tunnel level were approximately at the same elevation. What is the general course of that drift between those two points?

A. North thirty degrees east.

Q. And the distance between those points is how much; what is the distance between those two points?

A. About eight hundred feet.

Q. The vein upon that level was extended on northerly from that point, was it not?

A. You are speaking of northerly from point 9962?

Q. Yes, sir.

A. The vein was extended in the direction of north seventy east, which is more nearly east than northerly, for a distance of approxi-
mately sixty-five feet, marked drift 4 east upon plaintiff's ex-
199 hibit 1, from the point 9962.

Q. What was the point farthest north there at which you have seen the vein?

A. On the tunnel level?

Q. Yes, sir.

A. Near survey point 2090.

Q. Is that the point you just spoke of a minute ago?

A. I spoke of the drift being extended along the vein north seventy east from survey point 9962 to survey point 2090, that is, the drift along the vein?

Q. How far is that?

A. That is a distance of about ninety feet. I must have had the wrong scale on it if I gave you sixty-five.

Q. There is some slight turn to the course of the vein from the Deering crosscut to that point—course of it?

A. There is a gradual turn in the vein.

Q. Read the question, and let him answer it.

(Question read.)

A. There is a turn in the course of the vein from the Deering crosscut to that point.

Q. What is the general course of that vein from that point to the southerly face of the tunnel level?

200 A. Approximately north thirty east, about north thirty-two or thirty-three east.

Q. Now, going to the map, exhibit 2, the workings from that tunnel or in that level are disclosed in the stopes above it, crossing entirely practically the entire Senator Stewart Fraction and also clear over to within about twenty-five feet of the south line of the Senator Stewart claim itself, aren't they?

A. You are asking about the stopes above the entire Stewart tunnel level?

Q. Yes, sir.

A. The stopes above the old lower Stewart tunnel level are shown on plaintiff's exhibit 2 by the black lines marked in red above the old lower Stewart tunnel level and also above drifts 5 east and drift 5 west as marked upon plaintiff's exhibit 1.

Q. Now, read the question and let him answer it. (Question read.)

A. The stopes as shown upon plaintiff's exhibit 2 are within one hundred ten feet of the north side line of the Senator Stewart Fraction and within twenty feet of the south side line of the Senator Stewart, continuous between those limits.

201 Q. The two points. Now then, those black lines you have explained to the court represent the hanging wall sides of the various stopes, and as you describe it they are like steps going upward to the top of the vein along its western termination, is that correct?

Mr. DINES: I think you inadvertently put the word "steps" in the witness' mouth. I think he used it as the terraces, I think was his word.

Mr. GRAY: I think you are mistaken, Mr. Dines.

Mr. DINES: Am I?

Mr. GRAY: Yes.

Mr. DINES: I may be mistaken but I thought he said terraces, like the approaches of the terrace.

The COURT: He used the word "steps" in connection with part of his testimony; I do not remember whether it was in connection with this part of this testimony.

Mr. GRAY: Read the question. (Question read.)

A. The black lines represent the hanging wall of the stopes as opened in the mine upwards from the old lower Stewart tunnel level to its termination upward just as they are located there.

202 Q. In a westerly direction?

A. Part of them in a northwesterly direction and part of them in a northerly direction.

Q. You have spoken of having opened the vein up to the fault along this raise that you run—is not that a raise from the southerly end of the tunnel end?

A. That is a raise in the stopes.
Q. Does that raise run up on the vein?
A. It does.
Q. What is its inclination from the end of the—what is that, a crosscut, do you call it?
A. Yes, sir, that is a little crosscut.
Q. What is its inclination?
A. Forty-five degrees, an average.
Q. Has the vein had an inclination—what is the inclination of the vein upward from the Stewart tunnel level in its southerly portion here?
A. I think forty-five degrees is about an average in the southerly portion from the Stewart tunnel level upward.
Q. Yes, sir, to this fault that you say cuts it off?
A. Yes, the fault cuts it off, and the upward termination of the vein is against this fault.
203 Q. From the Stewart tunnel level you have followed it downward to a connection with the 200 level, haven't you?
A. Yes, sir.
Q. And is that within the vein?
A. That is on mineable ore.
Q. What is the downward inclination of the vein from the Senator Stewart tunnel level to the 200 foot level as disclosed by your workings there?
A. About thirty degrees, average. The vein varies in dip greatly.
Q. There are local variations in both the course and dip of the vein?
A. Yes, sir.
Q. Now then, after the driving tunnel, crosscut, drifts a shaft was commenced from which these other drifts have been driven in a northerly and southerly direction?
A. A shaft was sunk to the 200 level.
Q. I won't quarrel with you. In a northeasterly and southwesterly direction, if you prefer it. Now, you can answer it, Yes or No, can't you?
A. Northeasterly and southwesterly, yes, sir.
Q. The intermediate drift was really quite short, isn't it,
204 Mr. Clancy?
A. Yes, sir; approximately 200, probably 250 feet.
Q. On the vein?
A. On mineable ore crosscut it.
Q. Yes, sir; and the course of that drift, the course of the vein as disclosed by that drift is what?
A. North thirty east.

Mr. DINES: What drift was that referred to?
Mr. GRAY: The 104 intermediate.

Q. That is how far below the tunnel level vertically?
A. Approximately forty feet below the tunnel level.
Q. And on the incline?

A. That is a very peculiar level. On the incline at the point underneath the south side line of the Senator Stewart Fraction the vein was very steep and the incline is only probably forty-five or fifty feet, due to the local bend which occurs on the tunnel level, the dip is about forty-five degrees at the center, but on the southerly end of the 104 intermediate the dip is again very steep as noted by the short distance horizontally, it is between the 104 intermediate and the tunnel level.

205 Q. The shaft goes down in the footwall of the vein, don't it?

A. I understand that the shaft was started on the vein, but soon went into the footwall, and at the 100 foot level and below it is in the footwall.

Q. Then what is the inclination of the shaft?

A. 45 degrees.

Q. And all of the crosscuts were driven out on these levels out to the vein?

A. From those levels the crosscuts were driven to the vein east and west.

Q. East and west—well, that is an arbitrary term when you say east and west, is it not?

A. I use the terms east and west merely arbitrarily, but the fact of the matter is that on the 100 foot level the course of the 100 is more nearly east than it is north.

Q. Now, on the 100 foot level you have developed the vein between what points?

A. On strike, you mean?

Q. Yes.

A. On the 100 foot level we have the vein developed from
206 the crosscut from the shaft easterly to its termination, southerly on this particular level from these workings for a distance of something over 200 feet; then, at the elevation of the 100 foot level we have the vein developed in raise No. 223 west from the 200 foot level, but it is not connected with the work on the 100 foot level.

Q. When you say "Easterly to its termination," you mean its termination against the Osborn fault?

A. Its termination against the Osborn fault, yes.

Q. What is the distance between these points, from the point east where you have it developed in that raise, how far is that on that level?

A. About 450 feet.

Q. Between the point where it is developed by that raise on that level and the second point where you cut the vein with your crosscut from the shaft, what is the course of the vein?

A. Approximately north 45 degrees east from the portion where we have the vein developed up from the 100 foot level in the raises.

Q. Where do you take that from, from the raise there that connects the tunnel level?

207 A. We have it in two raises, there and here, and I took it from the point there that I know where it is.

Q. Suppose you take it from the point where you know where it is in this section?

A. I would have to get a section of that raise. I know it is in the top of it.

Q. How far vertically below the tunnel level is the 100 foot level?

A. About 80 feet.

Q. And on the incline?

A. About 114 feet. It bears a mathematical relation to the height.

Q. Mr. Folsom called my attention to the fact that you have been giving that course only in one direction. It would be south 45 west or north 45 east?

A. Mr. Folsom did not hear what I said. I said north 45 east and north 30 east.

Mr. FOLSOM: I was speaking of the direction of the dip from the west edge.

Q. I don't know that you gave that, Mr. Clancy?

A. If I gave you the course of the vein at that point, I gave you the dip in degrees. This dip is at right angles to the course.

208 Mr. FOLSOM: I mean the dip of the shaft which you referred to a few minutes ago.

WITNESS: The dip of the shaft is 45 degrees, and the direction of the shaft is downward, south 50 degrees east.

Q. On the 100 foot level, northeasterly from the shaft or from the crosscut from the shaft the vein was developed to what point?

A. The vein on the 100 foot level is developed from this level which runs south from the shaft for a distance of approximately 470 feet.

Q. Now then, the next development was from a crosscut from the shaft on the 200 foot level, is that correct?

A. The next lower working is the 200 foot level, which was developed by a crosscut south from the Stewart No. 1 shaft.

Q. That is deeper in the earth than the 100 foot level?

A. Yes.

Q. And that level is approximately how long between its two faces?

A. Do you wish me to give the eastern and western extension, or the entire length?

209 Q. The northeastern or the southwestern or the northern and southern or the eastern and western, whichever you have a mind to call it. On the vein, how far is that driven?

A. Approximately 1,000 feet.

Q. And what is the general course of that drift between those faces upon the vein?

A. North 45 east.

Q. The vein in your judgment is shown in the two ends of that drift?

A. In the eastern end of the drift marked "Drift No. 205 East" on Plaintiff's Exhibit No. 1, the vein does not show.

Q. How near to the face is the vein shown?

A. Approximately 20 feet west of the face.

Q. Now then, from the 100 foot level to the 200 foot level what

is the inclination of the vein in a southeasterly direction or an easterly direction?

A. The inclination varies.

Q. Yes.

A. And at what particular point would you rather have me give it to you?

210 Q. Oh, I don't want the local dip; I want the average dip?

A. 45 degrees from the tunnel level to the 100 foot level. Is that what you asked?

Q. That is all right. Now, from the 100 to the 200, is it above the same?

A. No, it is a rather hard matter to arrive at an average on a thing of that kind; at the western portion the dip is approximately 30 degrees and in the eastern portion between raise 216 on Plaintiff's Exhibit 1, and raise No. 211 East, the dip is approximately 50 degrees.

Q. That vein was stoped upward from the 200 foot level up to the 100 foot level and then above the 100 in the course of mining operations there, was it?

A. It was.

Q. Now, the next development was through the Fir tunnel, Mr. Clancy, that was run in here and is shown as your 400 foot level, or Fir tunnel; is that right?

A. No; we were only down to the 200 and the next development was at the 300.

Q. Was that developed from the shaft too?

A. No, sir, there was a winze sunk in the south end of

211 the crosscut marked 200 south crosscut on Plaintiff's Exhibit 1.

Q. And the 300 foot level was opened up from that winze?

A. Yes, sir, it was opened up from that winze.

Q. Now, that winze, what was its inclination downward?

A. 35 degrees for a short distance, but an average of 40 degrees.

Q. And that 300 foot level was then opened up in both directions, was it, northeasterly and southwesterly?

A. Both directions from this winze, yes, sir.

Q. How long is that level between its extreme ends; not following all those little crooks, but approximately how long?

A. Oh, approximately—do you mean the opening on the vein as far as it is open, including the stopes where we know the vein exists?

Q. Yes, as far as you know that it is upon that vein?

A. As far as we have opened it?

Q. Yes, as far as the Stewart Mining Company has opened it on that level. It is shown away down here where you have gotten over into the Ontario, I guess, haven't you?

212 A. Yes, that is under the Ontario. It is approximately 1,000 feet long.

Q. A portion of it is not in the vein, is not that correct?

A. There are several portions of the workings marked on the 300 foot level which are not in the vein.

Q. But there is one large portion in the fault here that you say is not in the vein?

A. The portion of the drift from survey point 2032 to survey point 2113 is on the foot wall side of the pay streak.

Q. What is the general course of that level?

A. Of the vein?

Q. Yes, as disclosed, of the vein.

A. A break occurs on that level.

Q. Where?

A. It produces a wide separation of the vein.

Q. Take that portion of the vein south of the break and tell me what the general course of that is?

A. Practically south as far as shown by the workings on the 300 foot level at that point.

Q. Take the portion of the vein north of that break?

213 A. That southern course extends for a distance of approximately 70 feet.

Q. That is as far as you have developed it there, isn't it?

A. By the Stewart Mining Company. The Ontario Mining Company developed it on a south 42 west course beyond that.

Q. Now, above that break, what is the course of the vein?

A. From end to end?

Q. Yes?

A. North 35, east.

Q. Now, down in the Ontario you say, upon the same level—that is not the same level; has it been developed on that same level?

A. On the same level as the 300 of the Stewart it is developed by the stopes of the Ontario.

Q. And they disclose that vein down in there as having what course?

A. South 42, west.

Q. Take it south of this break that you have spoken of, Mr. Clancy, and what is the dip of the vein?

A. As shown by the Stewart workings?

Q. As shown by your workings and the Ontario workings

214 both?

A. The dip varies greatly, and the strike also varies greatly, as shown by the workings depicted on the map.

Q. Yes. The general average dip, what is that?

A. The dip from raise 328 west is marked on Exhibit 1—the dip is about 30 degrees or 35 degrees, and in the Ontario below the 300 foot level it is very steep; my recollection is that the dip is about 60 degrees at the top.

Q. In which direction?

A. A southeasterly direction.

Q. Now, take it above the break and what is the dip of the vein, the average dip as you find it from there up to the point where you connect with your winze where you opened up that drift?

A. It is shown to be approximately 45 degrees through the Gray stop- of the Ontario.

Q. That would be southeast?

A. Southeasterly; the dip is all southeasterly. Along through

the stopes up to the winze the dip is about 35 degrees, and along the portion marked "Raise No. 300D" upon Exhibit 1 and extending easterly the dip gradually changes until it is approxi-
215 mately 50 degrees between the 300 and the 200 and downward to the 400 from the east end; that is, it gradually steepens toward the eastern end.

Q. Now, take this point. What is this survey point; is it 2050?

A. Yes, 2050.

Q. Up to that point, what is your average dip from there down to where you connect with the winze on that level; about the same, 30 or 35?

A. No, from the winze upward to survey point 2050 the dip along that level is steeper than it is southwesterly; I should say on the level that the dip would probably average 55 degrees, but it varies very much along that level, as you can see by the different levels.

Q. Now, the mine has been opened up and stopes made from the 300 foot level to the 200 foot level at the various places as shown on the map?

A. Yes.

Q. And those stopes rise from the level of the 200 foot level in a northwesterly direction, or in a westerly direction?

A. The stopes show just as they are shown in their rela-
216 tions to each other, just as they are on this map going upward.

Q. Now, the next development was in your Fir tunnel?

A. It was.

Q. And they cut the vein first where?

A. It cut the vein near survey point 2513 on Exhibit 1.

Q. And from there you drifted along on the vein on what you call your 400 level, didn't you?

A. The tunnel was driven in straight without regard to the vein, but for quite a long distance it included the vein.

Q. For how far?

A. Testifying from memory, without looking up notes, I should say to near survey point 2094.

Q. That is about how far, about 200 feet, isn't it—no, it is more than that?

A. 280 feet.

Q. What is the course of that drift along the vein between those survey points?

A. South 48, west.

Whereupon further hearing was adjourned until Tuesday, January 7th, 1913, at 10 A. M.

217 TUESDAY, *January 7th*, 1913.

WILLIAM CLANCY resumed the stand for further cross examination.

By Mr. GRAY:

Q. Mr. Clancy, at the adjournment last night we were down in the Fir tunnel, weren't we?

A. Yes, sir, about the point 2094.

Q. At what point did you say you first struck the vein on the Fir tunnel level?

A. We first struck the vein on the Fir tunnel level near survey point 2513.

Q. The Silver King tunnel and workings of the Ontario are in the same color and on the same level, are they not?

A. Practically the same level.

Q. Where do you find the vein on that level elsewhere than in the Fir tunnel?

A. In the portion of the lateral drift which I am pointing to near survey point 2100; also we find a portion of the vein in the direction in which I am pointing, and marked drift 415 west, and in the raise marked "R. 415" and in the raise marked
218 "R. 410."

Q. Where else at the same level?

A. In the drift marked "Gray Drift" in the Ontario mine, also in the drift marked "Frank Drift" in the Ontario mine.

Q. Now, it is thrown over here into the drift No. 415 west as marked by a fault, is it?

A. No, sir, that is a spur or a hanging wall deposit of ore or an enlargement; it goes something as I am pointing out from the easternmost extension of the drift marked "Drift 405 East" extending southwesterly in the general direction to a point which upon this map, Exhibit 1, shows the intersection of shaft No. 2 and the working marked "409 Crosscut;" thence in a southerly direction——

Q. Into these workings?

A. The workings 415, and I do not know the exact course of the hanging wall to connect with the Gray drift, but we do know there is no vein in the extension of the crosscut which is extended in a southeasterly direction from the Gray drift, and the working which has been since extended from that, and the presumption that we have made is that it connects with that drift.

Q. Now you said that from point 2519 to point—whereabouts in here have you found your vein?

219 A. From near survey point 2513 to near survey point 2094.

Q. I want you to give me that course again; I have forgotten what that was?

A. South 48 west.

Q. That is the course of your tunnel?

A. That is the course of the tunnel.

Q. And you say that that is in the vein throughout that entire distance?

A. Through that neck it is in the vein.

Q. Now then, the Gray drift, what is the course of the vein from the point where you first find it on that level in the Fir tunnel, projected through to the southern end of the Gray drift?

A. Do you mean the course of a straight line connecting where we first struck the vein in the Fir tunnel with the Gray drift?

Q. Yes, approximately the general course between those points.

91

It won't go very far out of a straight line. Well, along the Gray drift; the Gray drift is on the vein, isn't it?

A. The Gray drift is on the vein.

220 Q. Now, a line along the Gray drift and up to that point there will give what course?

A. A line through the Gray drift extended to survey point 2513 will have a course of approximately north 35, east.

Q. Now then, you have not put your elevations on there yet, have you—oh, I see; you have marked them with lead pencil?

A. No, the elevations of the different workings are marked in red.

Q. In red, I see. Now, all of these levels that you have described, the Stewart tunnel level, the 104 intermediate, the 100 foot level, the 200 foot level and the 300 are approximately level throughout their length, are they?

A. They are.

Q. The southern end is a little bit higher in each instance than the northern end?

A. I should say the southern end is a little bit higher than the center, and the northern end is a little bit higher than the center in each case, but they are for all practical purposes level.

221 Q. Now, will you please answer that question?

(Question read.)

A. That statement is true.

Mr. DINES:

Q. What statement?

A. The statement made by Mr. Gray that the southern end is a little bit higher than the northern end; it is, probably a foot in some instances.

Mr. GRAY:

Q. You have depicted on here in red on Exhibit 3 what you call the apex of this vein. What is the course of the apex northerly and southerly across the Senator Stewart Fraction, the general course of it?

A. The course of the apex from the point where the apex crosses the south side line of the Senator Stewart Fraction will have to be given in courses and distances in order to give it to you. It is a crescent shape, and there is no general course to a crescent.

Q. I am perfectly willing that you should give me that course in courses and distances; where is the first course that you want to give me, and between what points?

A. At a point on the south side line of the Senator Stewart Fraction vein——

Q. Now, from there to where?

222 A. From that point to a point along the apex as shown upon this map about 300 feet——

Q. Tell me to what working or to what place; I don't care about your feet; what working?

A. To a place where the letter "W" in the word "Stewart" in the title "Senator Stewart Fraction" is shown.

Q. What working is that or what opening on the apex as you call it?

A. There is no working or opening upon the apex at that point.

Q. All right. Then, don't give me any course at some point that you have painted on the map where the apex is not disclosed; give me the general course of your apex in a northerly and southerly direction?

Mr. DINES: We object. The witness has a right to state that there is no general direction to a crescent.

The COURT: That is quite true, and if counsel desires to draw a course between two points, he should designate the points. The witness has answered as to the other. The objection is sustained.

Q. You cannot give the general course of that apex in a northerly and southerly direction there, because you say that the apex
223 from the south line of the Stewart to the point where you have given it a twist running southeasterly is a crescent, do you?

A. To the point—the course as shown upon this map is the crescent.

Q. (Last question read.)

A. The question injects a condition which does not exist; it suggests that I have given it a twist. I have not given it a twist; the apex is depicted just as it is.

Q. All right. To the point where you depicted as going in a southeasterly direction?

A. All right.

Q. Is it a crescent between those two points?

A. Between the points as I have marked it on the map, approximately 120 feet of the working which is shown upon Plaintiff's Exhibit No. 3 as the apex drift, I can give you a course.

Q. And do you say that it is a crescent from there over to the point where it crosses the south side line?

A. Why certainly it is a crescent.

Q. All right, that is an answer. Now then, where is the point at which is disclosed this so called apex at its highest point
224 above the Silligo tunnel?

A. The highest point at which the apex has been disclosed above the apex drift is in the raise marked "Raise No. 4 East" upon Plaintiff's Exhibit 1.

Q. Yes. Now then, show us where it is on Exhibit 3; make a mark there.

A. At the point where I have marked on Plaintiff's Exhibit 3 as apex with lead pencil marks.

Q. Now, following in a westerly direction and then in a southerly direction, where is it next disclosed upon that ground?

A. In the western extension of the apex drift.

Q. Just mark that point upon the Exhibit 3?

A. Near the point which I have marked "A" it appears in the back of the drift near that point.

Q. How about this point down here that you marked?

A. I was merely locating the face of the drift there.

Q. Where does it next appear, following south?

A. The next point at which it appears is on the south side lines of the Senator Stewart Fraction, at which point we actually see the top of the vein.

225 Q. With those three points, Mr. Clancy, known, you draw what you call a crescent, showing the apex of the vein, is that correct.

A. With those three points and the location of the stopes, we do locate the apex.

Q. I say, with those three points which you say are the only three points at which the apex is disclosed, you draw what you call a crescent for the apex of the vein in a north and south direction across that claim?

A. We will——

Q. Answer that question now, and then you can explain?

A. No.

Mr. DINES: I object. The witness has a perfect right to say that he takes other data into consideration.

The COURT: Let him answer yes or no, and then he can explain.

Q. Now explain?

A. We use the three points which I have described. We have the stopes into a point where the vein is no longer profitable, and in other portions of the vein stopes we find a fault cutting them off, and we find faults in the raise which I have shown you. We had

226 the faults in this apex drift and our stopes very near the apex drift, only 15 feet below them, so that we get our three points which I have described, and the location of the top of those stopes and locate the apex at the place as it is.

Q. Now then, from the highest point at which you have found that which you call the apex up here in the raise from the apex drift, to the point where it crosses the east line of the Senator Stewart Fraction, what is the course between those two points?

A. Approximately south forty degrees east.

Q. You say then that the northern apex, as you call it, that along that apex the vein has been disclosed where; you can perhaps assist the court more by going over to Exhibit 1; first, in your apex drift, which you have already described; now, follow on down?

A. In the eastern extension of the old lower Stewart tunnel, marked "Drift 5 East," near survey point 2584; then on this end, near the easternmost face of the 100 foot level, marked "Drift 105 East"; descending along raise marked "Raise 218 East," to the 200 foot level; in the back of the level near survey point 130; at a point approximately 20 feet west of the present eastern face of drift No.

205 east; at a point in a raise marked "Raise 214 East"; at

227 a height of 25 or 30 feet above the 300 foot level; in the eastern extension of drift No. 405 east, near a working marked "Raise 415 East."

228 Q. Mr. Clancy, I have now placed upon exhibit 2 a tracing of the apex as you have depicted it upon exhibit 3. There is no doubt in your mind that that is a correct tracing of it, is there?

A. Just in a moment I will see.

Mr. DINES: You had better trace it over exhibit 3.

Mr. GRAY: If he wishes to he can do that.

A. I can find out here, and see if there is something wrong with it. You must have used the wrong scale and put the apex there, because it is right over the top of this drift, just right in the end of that drift.

Q. Outside of that, is it all right—outside of that one blow that you gave it?

Mr. DINES: I submit, your honor, if it purports to be a correct tracing he should have an opportunity to find out. The witness cannot in the hurry of cross examination tell——

Mr. GRAY: All right.

The COURT: If it is meant to be a tracing it can be very readily seen by placing it on the exhibit 3.

Mr. DINES: If the witness is satisfied himself, I am.

A. The tracing is correct. I will put it over this map (exhibit 1), and I can answer your other questions very quickly, too.

229 Mr. GRAY:

Q. Let us just tack it up here for a minute (on plaintiff's exhibit 1).

A. The apex is not shown quite far enough out on the 200 level to be exact and it does not extend down to the 400 level as I have described it. Outside of that it is correct. It does not extend to the point where I have described the apex as being at the base of raise 415 east. It is a very little variation, it is practically the same, there would be only a movement there just over this drift.

Q. That is down in an easterly direction from this drift, south from the apex?

A. About the width from the apex as shown; that is, the south edge of the apex would then be the north edge; that is the only difference it would make.

Q. Now then, from that point to the point where it is developed on the south line of the Senator Stewart Fraction claim the apex is simply painted by you according to your judgment as to its location?

A. According to my judgment using the stopes and location of the apex as I found it in other places.

Q. You did not find it between those places, did you?

230 A. That is simply a mistake the same as a clerical error.

Q. No, I say between this point in the apex drift and the south line of the Senator Stewart Fraction you did not find it?

A. Did not actually see it.

Q. No, sir, because it is not actually developed.

A. Because the stopes were not driven up to the apex.

Q. Certainly. Now, you suggested something about this tunnel, this little surface tunnel up here; you do not claim that the vein tops at the surface of that tunnel, do you, the apex?

A. Only what is down in that tunnel——

Q. Just answer the question. Read my question to the witness, will you? (Question read.)

A. No, I do not.

Q. The apex of the vein as you have described the apex does not come to the surface at any place as far as you know either on the Senator Stewart Fraction or the Senator Stewart claims, does it?

A. If by surface you mean out in the air, it does not. It comes to the surface, as I would call the surface, in the top of raise 4
231 east.

Q. On the apex drift?

A. On the apex drift on plaintiff's exhibit 1.

Q. Outside of that point it does not come to what you call the surface any place, does it?

A. That is the only place we have developed it on the surface.

Q. Well, as far as you know that is the only place, isn't it?

A. So far as it is developed.

Q. What is the dip of the Osborne fault?

A. It varies from sixty to seventy, seventy-five, and in places as steep as eighty-five degrees.

Q. In what direction?

A. Southwestward.

Q. What is the average dip as you have determined it?

A. Seventy degrees.

Q. When did you determine that to be the average dip of the Osborne fault?

A. I gave that as an average from the dips which I have seen in the mine?

Q. Isn't it true that you testified before his honor here in
232 preliminary proceedings sometime ago in this same case in which you gave the average dip of the Osborne fault as sixty-five degrees?

A. I may have said that the average dip at that time was sixty-five degrees before the raises were driven and the openings made along the faults that we have since found; I opened it up on the eastern end, which is very much steeper.

Q. You did say so, didn't you?

A. I probably did.

Q. Then it had been opened up at numerous places, hadn't it?

A. Not as many as it is now.

Q. How many more has it now? There is your testimony. You so testified as that time, didn't you?

Mr. DINES: I submit the rule is to read the testimony to the witness as the record can show it.

The COURT: He can read any part he wants to; that is correct.

A. There I have taken several different dips on that Osborne fault, and the average was sixty-five degrees; that was an average of the dips I had at that time; I took the dips and averaged them for you.

233 Q. How many places has the Osborne fault been developed since that time?

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A. It has been developed to a considerable extent in raise 314 east.

Q. Just point to that?

A. (Witness pointed on map)

Q. Was it developed there at that time, at the time you testified?

A. At the time I testified we only saw the appraoch to the fault and saw the fault in one place.

Q. You did not pay any attention to the local dips?

A. Yes, sir, we took those and averaged them up. You know it is practically impossible for a man to say anything between the limits of sixty-five and seventy degrees. You have the Osborne fault disclosed in the 400 level and the tunnel level, I took the difference in elevation between the 400 level and the tunnel level and the horizontal distance and got a dip from that.

Q. In other words, the greater distance over which you have a fault or vein developed the safer you are in taking the points along that development instead of some local dip?

234 A. Yes, sir, unless you have some other data to know that would not be correct.

Q. What is the course of the Osborne fault?

A. The course as disclosed on the 400 level is north eighty west.

Q. Just the average, the general course of it?

A. I will say from north 75 to north 80 west.

Q. I understood you to say that the Osborne fault was developed in the Siligo tunnel?

A. Yes, sir, apex drift, marked on plaintiff's exhibit 1.

Q. You depict in there the workings in the Ontario and the green lines represent the drifts on what are known as the Gray and Frank ore bodies, are they?

A. The green lines represent the workings of the Ontario; the lines above which the red spaces are shown—the red spaces are the stopes; the drifts are marked in green.

Q. The most southerly drift here, what is that?

A. That is the Frank drift.

Q. That is the Frank Drift. Now, I want the course of that drift. That is on the vein, isn't it?

A. It is.

Q. Take it from end to end and give me the course of it?

235 A. South 41 degrees west. I will put a line on there. The line which I have shown the average course of the Frank drift is approximately south thirty-nine degrees west. Counsel objected to my saying south 40 west. I usually give these courses as near as five degrees.

Q. Put it on again?

A. If you want to take a few minutes on it, I will plat it for you and bring it in this afternoon.

Q. All right. Now, give me the Gray ore body?

A. I can give you that from memory; it is north forty east.

Q. And there is one other in there called the May, I believe that is approximately *ap*rallel with the other, isn't it?

A. That is approximately north thirty-nine degrees east.

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Q. This is the Frank, did you say?

A. It is.

Q. From the Frank the stopes have been extended upward in a westerly direction?

A. The stopes have been extended upward in the Frank drift in a westerly direction.

236 Q. Yes, sir. Following the dip of the vein upward in that direction?

A. They have.

Q. And what is the dip of the vein there?

A. My recollection is that the dip is about sixty degrees in that stope. It is very steep, much steeper than the other portions of the vein.

Q. All right. Then above the Frank there are some workings in the Bunker Hill's ground there, aren't there?

A. There are.

Q. And that is the same vein going on upward?

A. It is.

Q. And it is next shown here in stopes above the 300 level?

A. It is shown in the drift of the 300 and in stopes above the 300 level.

Q. What is the course of those stopes?

A. Do you refer to the ones that were marked in the Bunker Hill ground?

Q. No, here above the 300 level?

A. The general course of the stopes above the 300 level near the letter "3" in the 300 level is approximately north twenty

237 east.

Q. Now then, you follow the vein upward to the westerly or northwesterly as you have it on its upward course through—what kind of a working is this?

A. That is a raise on mineable ore.

Q. Yes, sir. To the 200 level; is that correct?

A. We follow the raise from the 300 into the workings of the 200 level of the Stewart mine.

Q. Then up into the stopes above the 200 level?

A. Yes, sir.

Q. What is the course of the vein as disclosed in those stopes above the 200 level.

A. Do you want the general course of all the stopes as shown here?

A. Just generally through those stopes there as you have developed the vein. There is no use starting in on the foot wall in one end and winding up on the hanging wall on the other?

A. Approximately north 35 east.

Q. Then you follow on up to the Stewart tunnel level through a raise in the vein, don't you?

A. We do.

238 A. And as I recall, you said that the general course—that that Stewart tunnel level from its southern base up to the Deering crosscut was approximately north 30 east, the course of it?

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A. Very nearly that.

Q. That is the longest working upon the vein, isn't it, practically the whole property?

A. On the Stewart tunnel level?

Q. Yes, sir.

A. The 200 is——

Q. The same length?

A. Probably a little longer. Approximately the same length.

Q. And the stopes above the Stewart tunnel level, the vein has been stoped out in steps or terraces, as counsel has suggested you used the term yesterday, on the upward course of the vein to the northwesterly, hasn't it?

A. They have been stoped in a northwesterly direction as shown upon the map.

Q. On the inclination of the vein upward?

A. On the inclination of the vein upward?

Q. And the general course of those stopes above the Stew-
239 art tunnel level is approximately the same as the tunnel level itself, isn't it?

A. It is.

Q. The direction of the dip, of course, is at right angles to the strike, isn't it?

A. It is.

Q. Mr. Clancy, go to the 300 level at what you call the apex of the vein?

A. Upon which map do you wish me to place that?

Q. I do not care, either one. I suppose they are just the same?

A. I designate it more nearly by plaintiff's exhibit 1.

Q. Yes, sir.

A. The apex of the vein is between survey point 2528 and survey point 2569.

Q. There the apex of your vein is disclosed as you claim it?

A. Yes.

Q. You can follow upon the level from that point along that level to the ore bodies in the Ontario, can't you?

A. You can follow along that level on the ore into the
240 stopes of the Gray ore body of the Ontario.

Q. You would simply follow along your Brown level in the vein, keep within the vein on ore all the way over into the ore bodies in the Ontario?

A. With the exception of a short distance near survey point 2052; the opening is in the foot wall, but you can follow on the vein by going in the stopes and coming down raise 314 west in the ore bodies of the Ontario.

Q. Just for a short distance that it is off the vein?

A. It is.

Q. Those ore bodies that you speak of there are within the lines of the Senator Stewart Fraction extended southerly?

A. They are.

Q. Can you follow along the level from any place on this apex that you have marked up here to the westward—follow on a level there and get down to the Ontario ore bodies?

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A. We do not know what the geological conditions are to the westward as described upon our maps, but presuming the vein extended upward, if the Ontario was stoped up high enough we would.

Q. You would not get into the Ontario, though, would you?

241 A. The Ontario claim?

Q. Yes, sir.

A. No, sir.

Q. What is the course of the stopes above the Stewart tunnel level and beneath the Siligo—the apex drift as you call it? Let us start just above the Stewart tunnel level here and work upward. You start at the foot wall at one place and wind up at the hanging wall in another. Just say your black lines are the outlines of the hanging wall side of your stopes, aren't they? Just follow generally one of those black lines.

Mr. DINES: We object to him instructing the witness what to follow in giving the course of the stopes unless there is a rule of law that requires him to follow that line. I do not understand that the course of a vein is determined by the hanging wall.

The COURT: Of course not, but he can ask any sort of a question he likes.

Mr. GRAY: I understand when you give a course you start on the hanging wall on one place and wind up on the foot wall on another?

Mr. DINES: No.

242 The WITNESS: I will do that if that is what you want. A good average of the course of the stopes, as near as I can determine it, is north 70 degrees east, the stopes beneath the apex drift.

243 Q. The apex of the vein on the northerly side as you have disclosed it is lower in elevation where it crosses the end line of the Stewart than it is up there where it is disclosed above the apex drift?

A. It is.

Q. As I recall, you have testified that at the apex drift it is within 10 feet of the surface of the ground, something of that kind, up above the apex here?

A. Within ten feet of the slope of the raise we find the apex of the vein just at the end of the surface wash.

Q. Now what is the elevation of the vein at that point?

A. Approximately 3025.

Q. In traveling down here, how far is it from that point to the point where you first found it?

A. The next point we find it is in the apex drift approximately 80 feet of the point where we found it in the raise.

Q. What is the elevation there?

A. 3004.

Q. Next where do you find it?

A. In the eastern end of drift No. 5 east, near survey

244 point 2584.

Q. That is the Stewart tunnel?

A. The old lower Stewart tunnel, as marked on Exhibit 1.

Q. How far is it to the point where you find it there on your plan map?

A. About 300 feet.

Q. How much lower vertically is it at that point than it was up where you last saw it?

A. It is about 90 feet difference in elevation.

Q. Then you follow it down through this raise to the 100 foot level?

A. The apex is not disclosed in the raise at the point where the bend is shown, but we follow down along the vein and the apex is disclosed in the eastern vein of the 100 foot level right near there and on down in the raise 218 to the 200 foot level.

Q. And what is the elevation of the 100 foot level?

A. Approximately 2841.

Q. That is how far below the tunnel level?

A. Approximately 80 or 85 feet.

245 Q. Where you disclose it in the 200 foot level, the elevation is what?

A. Approximately 80 feet below the 100 foot level.

Q. Then next below that, where do you disclose it?

A. In the 300 foot level approximately 100 feet below the 200.

Q. And next below that?

A. In the eastern end of the 400 foot level which is approximately 70 feet below the 300 foot level.

Q. And what is the elevation in the 400 foot level where you disclosed the vein or the apex?

A. Approximately 25—approximately 2600 feet—approximately 2610. It is a short way above the bottom of the level. The elevation of the level is approximately 2600, and this is a short distance above, and that explains my hesitation

Q. Certainly. Now the 300 foot level discloses the apex of the vein, does it?

A. It does.

Q. As it crosses the southeast line of the Senator Stewart Fraction?

A. On the 300 foot level as shown on Plaintiff's Exhibit 1,
246 the actual apex is a short distance of the end line of the Senator Stewart Fraction, but the working on that level disclosed the apex a short distance west of the end line of the Senator Stewart Fraction in raise 314; that is, we have two points of the apex a short distance apart.

Q. Now, the elevation here on the 300, can you give me that; 2662, isn't it?

A. The elevation of the apex where that drift has crossed the east end line, would be approximately 2670 at the present time.

Q. You use the United States Geological Survey datum, do you, or do you use an arbitrary datum?

A. It is an assumed elevation of 2900 feet at a point near the mouth of the old lower Stewart tunnel, but that is approximately the same as that used by the Geological Survey.

Q. This raise parallel to the east end line of the Senator Stewart Fraction claim is how long?

A. By horizontal projection upon this map, 60 feet.

Q. And that is at what pitch; what is the angle?

A. It varies from 50 degrees to 80 degrees.

Q. And that connects the 300 with the 200, does it?

247 A. That connects the 300 foot level with the 200 foot level.

Q. Is the Osborn fault disclosed there?

A. It is.

Q. Where?

A. In the upper portion of the raise. It appears near the word "Raise" upon the map, and probably a short distance below it, but in that portion of the raise we clearly see the fault.

Q. And from there up?

A. From there up.

Q. When was this raise here between the 200 and the Stewart tunnel driven, this connection?

A. Recently.

Q. Since the injunction hearing, since this lawsuit has been commenced?

A. Yes.

Q. Was there any particular reason why there was not a connection made between the Stewart tunnel level and your so called apex drift along this so called apex?

A. There was no particular reason except the expense and the trouble of making it and the time. We can follow, there is

248 no doubt in my mind that we can follow there.

Q. I did not know that expense cut any figure in this case?

A. We did not have the time; we are short of work now.

Q. That is the only reason?

A. That is the only reason I know of. It can be followed.

Mr. GRAY: You may inquire.

Redirect examination.

By Mr. DINES:

Q. Are you following that work in this drift on Exhibit 1, designated the apex drift, now?

A. Yes, sir.

Q. How long have you been prosecuting it?

A. Since the work began it has been prosecuted continuously; probably two months ago, I don't remember the exact date.

Q. You are still prosecuting it?

A. We are still prosecuting it; it has been prosecuted continuously from the start.

249 Q. You were asked about the dip of a vein being at right angles to the strike, and I understood you to answer that the dip was at right angles to the strike. By that you mean what is known as the true dip?

A. True dip at any particular point. That only applies to the points or special place where it is taken.

Q. Now, do veins penetrate the mass of the earth in their course on straight lines?

A. They seldom do. I never saw one that did.

Q. Do they penetrate the earth on straight lines on their dip as they go downward?

A. Not to my knowledge.

Q. Does the course of an apex that crops upon the surface of the earth determine the course of the vein?

Mr. GRAY: I object. That is a question of law, and there is not any apex as far as they have testified here that crops on the surface of the earth.

(Objection overruled; defendant excepted and exception granted.)

A. The course of the apex does not correspond with the course of the vein in the ground, the strike of the vein.

250 Q. Do workings made upon the vein beneath the earth accurately show the course of the vein itself?

A. They show the actual intersection of the vein with the horizontal plane.

Q. How wide do you find the Stewart vein to be between the walls; what thickness of vein?

A. It varies greatly in width, from a few feet to several feet; six feet or seven feet or eight feet, and some cases wider than that. I would have to refer to notes and plat them to give you the exact width in different places.

Q. It varies from a few feet to how many feet?

A. To eight feet, I should say.

Mr. FOLSOM:

Q. Is that at right angles to the foot wall?

A. Yes, I mean the width of the vein as it is shown in some places.

Mr. DINES:

Q. That is at right angles to the footwall?

A. Yes, sir.

Q. Now, you take a vein at a portion of its width where, at right angles to the footwalls the thickness of the vein is shown to be eight feet, and compare it with another working, taking the

251 footwall at one point and the hanging wall of the wide portion at another point, and does it show a variation in the course if you take a line between those two points—do you understand me?

A. I did not follow your question.

Q. I am taking an assumed point in a vein, and taking another section in the vein that has a thickness of eight feet, and I draw from the same point in each instance, one to the hanging wall and one to the foot wall; do those lines show the same course?

A. They do not.

Q. Where stoping is done in a mine in the extraction of commercial ore, is it done in regular or irregular lines or planes?

A. Irregular lines; it is done just as the ore is found.

Q. Did you ever know of a vein where every point on its apex was at the same elevation?

A. I never did.

Q. What is the fact in veins, whether they be sub-surface apexes or apexes that outcrop on the surface of the ground, as far as
252 the elevation of the different points in the apex?

A. They vary greatly. The apex is usually very irregular in regard to elevation at different points along the apex.

Q. Did you find anything in the fact that the elevation of the apex of this vein as it is disclosed immediately beneath the wash right under the wash in the upraise from the apex drift, is at an elevation of 3,025 feet, and your apex as disclosed at the easterly side line is at an elevation of 2672 feet?

A. I wish to correct the figure which I placed upon the map as 3672. In that I was using the elevation of the apex at the back of the drift, and I find that the apez from the east end line of the Senator Stewart Fraction, as between the point where we see it in raise 314 and the point where we find it in the east drift on the 300 foot level at the elevation as near as I could determine it, which is very near the absolute elevation of 2682, and the elevation as given in the raise is correct, 3025 feet.

Q. Now, taking those elevations, do you find anything in the fact that you have one point in an apex at an elevation of 3,025
253 and another point at an elevation of 2682 that causes you to believe there is any departure from the normal or from what often occurs as miners' mine and find veins in the hills, by reason of that difference in elevation?

Mr. GRAY: I presume we are trying this vein instead of some other that miners find. I object to the question.

(Objection overruled. Defendant excepts and exception allowed.)

A. We find that condition anywhere. Just move that whole body and vein out a little further, a few hundred feet over to Deadwood Gulch, and you would have the same condition.

Q. Now, as to the points that you have designated in cross examination as the points where you have actually in the workings reached and seen the highest point of the vein, how did you follow up to get that point, on the true dip or an irregular dip?

A. At the point in the easternmost portion of the map shown as raise No. 415 on Plaintiff's Exhibit 1, the raise was put up on the true dip of the vein to find the top of the vein.

Q. And by true dip you mean at right angles to the strike?
254 A. Yes, as miners express it, it is square with the vein. Also raise No. 314 east was put up on the true dip to the 200 foot level, and raise 218 east was driven up with the vein on the left side or south side of the raise and the fault on the north side of the raise. I will supplement that answer and say that that condition in raise 218 is true to the 100 foot level.

Q. Now, you were asked about the jumps from these different points. Where the apex was actually disclosed, in drawing your line on Exhibit 3, designated in red as the apex, did you have data be-

tween the points that enabled you to determine the line in question with sufficient accuracy to tell whether or not it fell within or without the surface boundaries of the claim; if so, point out the data that you had?

A. Beginning at the top of raise 218 east on the old lower Stewart tunnel level near survey point 2584, which I have heretofore described as the apex of the vein, extending along the vein in a westerly direction to near survey point 2512 we are on the vein, which was run in a westerly direction, and dipping southerly. At the little place on the map marked in blue about ten feet west of survey
255 point 2512 there is a good showing of commercial ore approximately three feet in width, dipping south with a strike east and west. Above and just north of survey point 2512 the fault is shown against which the vein terminates on its upward course, but at that point we did not have the top of the vein. Extending along our workings on the east No. 3 crosscut and into the working shown as drift 4 east we have the vein with a fold, a flattened condition, and near survey point 2090 the vein is shown with at that point a southeasterly course and a northeasterly dip. From that data and the knowledge that the vein existed in the apex drift, we put the apex as existing between those two points. The work to prove that up we did not have time to do; the apex drift is now being extended to find the apex as it exists against the Osborn fault.

Q. If you project from your points of the stoping as shown on your stoping map, Exhibit 2, the footwall or lowest portion of the apex of those stopes where you have the wall disclosed to the surface, or to the Osborn fault, would that give you any line that falls within any certain portion of the claim?

A. The Osborn fault is shown to be a persistent fault
256 through the ground in question, and a line drawn between the point where we know the Osborn fault to exist in the apex drift near survey point 2502 and the point where we know the Osborn fault to exist in the old lower Stewart tunnel level near survey point 2584 would give us a bounding plane to our vein; that is, we know from what is developed below and above, we know within all human probability that that vein will not go beyond the plane of that fault; therefore the edge of the vein or its upward termination would lie within the Senator Stewart Fraction claim.

Q. Have you made any workings beyond that plane of the fault to determine whether or not vein matter exists beyond the face of that fault?

A. We have driven the working marked upon Plaintiff's Exhibit No. 1, marked "Drift 5 East" beyond survey point 2584 for a distance of approximately 35 feet, beyond the Osborn fault into country rock.

Q. Did you disclose any vein material in that portion of the drift as you went on beyond the point where you have found the top of the vein?

A. No.

Q. Are there any other portions of the mine where you
257 have prospected to see whether or not the vein could be determined the face of the Osborn fault?

A. Our Fir tunnel level was driven on the footwall side of the Osborn fault, and discloses the vein as I have described it on the 400 foot level near survey point 2513; beyond that, underneath the fault, we find nothing.

Q. Does it disclose the fault?

A. The fault is shown in the Fir tunnel near survey point 2513; also raise 415 was put up above the 400 foot level near survey point 2537 beneath the south face of the Osborn fault from the top of raise 415, which is approximately 15 vertically above the 400 foot level; that drift was driven eastward for a distance of 25 feet, and nothing was disclosed, nothing in the shape of a vein; there was no vein of any kind disclosed in that working beneath the Osborn fault. This work which I have described as raise 415 east and the drift from the top of raise 415 east was driven by the Ontario Mining Company with the consent of the Stewart Mining Company.

Q. Now, are there any other portions of the vein where the workings disclosed that where the vein comes in contact with the fault on its upward course that it cannot be followed further?

258 A. We have driven through the Osborn fault on the eastern extension of the 200 and the 300 foot levels for a short distance beyond the termination of the vein, and found nothing in the drift.

Q. Does your vein begin to turn in the shape that it is shown on the apex map, Exhibit 3, before or after it has come in contact with the Osborn fault?

A. It begins to turn long before it comes in contact with the Osborn fault.

Q. How many feet before you find the Osborn fault do you have that turn in your vein where its course seems to be changed?

A. Something over 400 feet.

Q. In answering that question, you have taken the line of the stopes immediately under the northerly and southerly portion of the apex, have you not?

A. I have; I have taken the distance from the south side line of the Senator Stewart Fraction to the point where we know the Osborn fault to exist in the apex drift.

Q. Did you find that turn on any extent followed and indicated in your stopes upon the eastern portion of the Stewart mine,

259 easterly from those stopes that you have referred to?

A. Yes; on the old lower Stewart tunnel level we have stopes to which I am pointing above drift No. 5 East and Drift No. 5 West as they are marked upon Exhibit 1.

Q. Was that curve or turn that is shown in these stopes on the map the one that resulted from your mining in the usual manner on your vein, or were they made for the purposes of this litigation?

A. That was mined long before this litigation was thought of.

Q. Where your turn in a crescent shape is shown to the southeast of the line of stopes on Exhibit 2, following immediately under the apex drift, when was that work done?

A. The stopes between the 100 foot level and the Stewart tunnel level between drifts No. 5 east and No. 5 west was done in the early

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part of 1911; probably they were finished in—they extended into the latter part of 1911 and were probably finished in September or October, I don't remember the exact date, but sometime in 1911 the work was done.

Q. When was the stoping done in the Ontario, before or
260 after the stoping between the 100 foot level and the old Stewart tunnel level?

A. After.

Q. How far from the line of the Osborn fault can you show the turn, where the course in this line of your stopes in the lower portion here turns, between the 100 foot level and the old Stewart tunnel level?

A. The distance from the Osborn fault through which the turn or crescent condition of the vein exists is approximately 700 feet in length.

Q. You have stated in answer to a question on cross-examination that the course of the Osborn fault was north 70 to 75 degrees west, if I quote you correctly. Is that right?

A. I think I said the course was from 75 to 80 degrees west.

Q. What do you mean by the course of a fault?

A. The general direction of the intersection that the fault makes with the horizontal plane.

Q. By the use of the term "fault" used by you here, do you mean the particular line where some dislocation of the stratification is evident?

261 A. I have used the work "fault" to express the surface which the Stewart vein terminates on its upward course. I do not mean——

Q. That would be, then, the southerly face or the southerly plane of the Osborne fault as you have described it here, would it not?

A. That would be a term which would express what I mean.

Q. You don't mean in any of your answers here to give the fault any particular dimensions like a vein?

A. No, I do not mean to give any particular definition to a fault. The term as I have used it here only meant the plane against which the Stewart vein terminated on its upward course, this particular plane.

Q. You were using it in just the ordinary miners' signification?

A. That is it.

Q. You have made no particular geological study of that matter, have you?

A. No.

Q. Please mark, Mr. Clancy, if you can determine it, the most westerly point going from your easterly end line of your
262 Stewart Fraction in a westerly direction that your apex is disclosed; mark it with the letter "W" so we can identify it.

A. The most westerly point?

Q. Yes, that the apex is exposed?

A. I have marked the letter "W" in lead pencil at the top of raise No. 2 west, on the south side line of the Senator Stewart Fraction.

Q. Now mark your most westerly point where the apex is disclosed

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in the course going northwesterly and as near as you can get it to the curve of the course of the apex? Mark it "W 1."

A. I have marked the point where the apex is disclosed near survey point 2502 with the mark "W Prime."

Q. Following still to the westerly, mark the point where your apex is disclosed in the western branch of the apex drift with "W 2."

A. I have marked with "W 2" near survey point 2532 the place where the apex is disclosed in the western apex drift.

Q. Where is what is known as the Clancy fault?

A. The fault which I have described as a big fault, and which has been called the Clancy fault is shown in the west face of the west apex drift as shown upon Exhibit 1. It is also disclosed at
263 the point where the "W" appears upon the map at the top of the raise marked raise No. 2 west on the south side line of the Senator Stewart Fraction claim.

Q. Now as you have followed up the apex of that portion of the vein that runs from the Stewart Fraction south side line in the crescent shape to the point that you have marked "W" and "*w*-2," will you please state whether or not the Clancy fault has been encountered?

A. Referring to plaintiff's exhibit 2 remember that the
264 Clancy fault was shown at the top of the stopes, the northwesternmost point which I will mark "C" in lead pencil on plaintiff's exhibit 2. That is the only point between the point marked "W" at the top of raise 2 west and the west face of apex drift.

Q. Is there not another point in a raise or in those stopes where your Clancy fault is disclosed along that line?

A. There is in the Senator Stewart.

Q. Where is it in the Senator Stewart?

A. It is shown in the top of a raise near where the word "cut" appears in No. 7 cut on plaintiff's exhibit 1. It is the top of raise marked No. 7 raise.

Q. Now, you were asked on cross examination if you did not—from the raise along the Senator Stewart Fraction south side line where you found the top of the vein jumped to a point up in here. What about the vein at that point where the Clancy fault is exposed at the point "C" that you have given?

A. I had forgotten about the point "C," or it slipped my mind at the time I was being cross examined. The conditions at point "C" are the same as they are the top of raise 2 west.

265 Q. Now, have you made any effort to find whether or not the vein goes on an upward course any further than that Clancy fault where it is found at the top of it lying against that Clancy fault?

A. We are very desirious of finding an extension of the vein, if possible.

Q. What work has been done to show that?

A. Extended from the top of the stopes where the *vine* was cut off by the Clancy fault, extended a crosscut marked upon plaintiff's exhibit 1 as No. 7 cut and shown in pink, that working was extended northward and northwestward through shattered country

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rock to its present face near the word "level" in 85 foot level, as shown on plaintiff's exhibit 1.

Q. Well, were there some short *corsscuts* driven from the foot wall in some other portion?

A. That is the only working which we have extended from the workings above the old lower Stewart tunnel level above drift marked drift 4 west in the endeavor to locate the vein, because that working made a practical connection although not a physical connection with the level marked 85 foot level from the raise marked Samuel's raise. Both workings show a wide area of shattered country
266 rock.

Q. Are you speaking now of the Samuel's raise?

A. I am speaking of the crosscut southeastward from the Samuel raise, marked 85 foot level and a crosscut marked No. 7 cut which extended from the top of the stopes above the old lower Stewart tunnel level marked drift 4 W.

Q. Then, what do you say as to the Clancy fault where the vein comes in contact with that. Can the vein be traced farther or not?

A. I would say you could not trace it farther. We were unable to do so, and on the eastern end at the point marked "W", raise 2 W., the top of that raise was within about 90 feet of the surface; the surface wash is rather deep at that place. Our surface map will show a gulch extending up the top of the mountain and downward, in which place the wash is very deep and the vein has no doubt been erroded beyond that.

Q. You were asked on cross examination about this vein, Stewart vein, on its dip underneath this portion of the apex, and by this portion I am referring to the crescent shaped portion extending from the south side line on toward the apex drift, and certain flat places where portions of the vein were pointed out to you. Please
267 locate on that map the extent of that change of the dip of the vein which you call a flattening or roll of the vein at that point where its dip seems to be changed?

A. The flattened portion extends between the green level marked 104 intermediate and the words "Stewart" and "Senator Stewart." I can describe that portion on plaintiff's exhibit 1 from survey points. Beginning on the old lower Stewart tunnel near survey points 2090, going in a southwesterly direction along the tunnel to near survey point 9522, thence easterly from survey point 27 along drift 5 W. to survey point 43, and thence along drift 5 east to survey point 2512. That roughly describes the flat-ened portion as it appears upon the tunnel level, the old lower Stewart tunnel.

Q. I will ask you if going a dip in this portion in an easterly way, taking that dip immediately underlying this apex what is the dip the vein starts out with, taking the true dip at right angles to the vein, the strike of the vein?

A. You mean the amount of dip?

Q. Yes, the amount of dip, if you have it, if you know
268 about what it is, or if you cannot express it on an average, give it a variation from so many to so many degrees until it gets to the flat place?

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A. From the apex to the tunnel level below, where the word "Fraction" appears on plaintiff's exhibit 2, the dip would average forty-five degrees at that particular section.

Q. Then you go to what kind of a dip as you go on toward the east?

A. My recollection that forty-five degrees will apply to the entire stope above the old lower Stewart tunnel level to the apex, that is, an average.

Q. Yes. Now then, when you come to the condition that I have just described where it is flatter, what is the dip as you go easterly, if you take that course for the dip?

A. The dip is practically nil; it is level for a short distance, and down about ten degrees, a very slight dip, I don't remember just the exact dip that you would find by going across in an easterly direction.

Q. Then in following the dip on the easterly course that opposing counsel interrogated you about on cross examination you encounter the same conditions that you find in following the easterly and westerly apex after it has curved in a southerly direction, do
269 you not, as to the flattened condition?

A. After coming down you would have to go up if you travel in an easterly direction. The word "dip" does not apply to that easterly direction.

Q. I am speaking of the easterly direction that he called your attention to; he was giving you a dip of this vein in an easterly or southeasterly course. Now, in taking that course, you would go down, then you would go on a level and up, is that correct?

A. In taking that course perpendicular to the lines you would go down to that flat place, then practically level and in the eastern portion you would not have any vein to follow.

Q. Just take the dip of the easterly and westerly portion of the apex as we claim it, and going down in a downward course as we claim it between our end lines onto the Ontario, just tell the court in a general way what conditions you meet in traveling that course and especially call attention to the 100 foot level.

A. From every point in the Ontario workings, pass a plane parallel to the east end line of the Senator Stewart Fraction,
270 you would travel upward from the Ontario workings to the upper edge or apex as is shown upon the plaintiff's exhibit 3; that is, if planes were passed parallel at any intervals the course would be upward from the Ontario workings to the apex as shown upon plaintiff's exhibit 3.

Q. Would that be a straight line upward course or would it have variations that follow the variations in the dip of your vein?

A. It would have variations.

Q. How would it be about the one hundred level. Above the 100 level?

A. The last 100 feet or practically 100 feet, from 80 to 100 feet, would be very steep on that course.

Q. *On* is it on the 200 level?

A. The same condition applies.

Q. And the 300 level in coming in that southerly direction?

A. You are speaking of the eastern end of the 300 level?

Q. No, I am speaking of the 300 level generally, take any and all portions of it?

A. So far as the vein has been developed the course from the Ontario workings would be upward through the 300 foot
271 level, but as the 300 foot level would show on a section passing through the Gray ore body it would be more nearly level, it would show something like a section through the piece of ground which I have described through the word "Stewart" on the tunnel level.

Q. You were asked by counsel if it were not true that the Green workings in the Ontario and the Silver King were on approximately the same level and if they were not on the same level as the fir tunnel level, and you were traced down through the fir tunnel level and asked if you would not go to those workings on the same level. Please explain that to us now so I can definitely understand what is the position of the vein through the portions of it that are penetrated by the workings through which he took you in getting down to the Ontario ore bodies?

A. Mr. Gray took me through the Fir tunnel level, then my recollection is that he stopped; he went back to the 300 foot level and asked me if it was not possible to go along the level into the workings of the Ontario, but the line through which he took me is not in a plane parallel to the east end line of the Senator Stewart Fraction. That was the direction which he described; he asked me if I could not start upon the apex as shown in the 300
272 foot level and go along the 300 foot level into the openings of the Ontario in the direction that I have indicated upon plaintiff's exhibit 2.

Q. You told him you came into the top of the Ontario stopes; is that the connection that is shown here where the ground meets the red exhibit 2?

A. It is.

Q. What is the height of the stope at that point?

A. Approximately 70 feet vertically.

Q. The entire stope—other portions of the stope would be below the point where that entrance is made, would it not, at a lower elevation, is that right or not?

A. There is a very small portion of the stope above that. All the rest of the stope is below it.

Q. And how about your Frank ore body in the Ontario, is that correctly shown, the place here, the location, as farther to the south than the May and Gray?

A. It is.

Q. These flat places that you have described are rolls in the vein. You first noted them as I understand in the intermediate level designated in green on exhibit 2, is that right?

273 A. In the course of the workings that was the first place they were noted, the first place that I saw them, rather, I should express it; the flat-ened condition is shown in the eastern portion of the tunnel level.

Q. Now, in going to your next level below the intermediate level which would be your one hundred level, would it not?

A. It would.

Q. What are the conditions of the stopes from that level in reference to this roll or flat-ened condition of the vein?

A. They are very flat between the Drift shown upon plaintiff's exhibit 1 as drift 105 west and the portion of the stope through which raise 100-C passes. There is a very flat space for possibly, approximately fifty or sixty feet in that section of the ground.

Q. Then between the 100 and 200?

A. There is a flat portion of the vein which has been stoped as shown upon plaintiff's exhibit where the letters "RT" of Stewart in the title Senator Stewart appear.

Q. And between your 200 and the 300?

274 A. There is an exceedingly flat portion of the vein shown near survey points 2096 and 2014 on plaintiff's exhibit 1 marked as stopes upon plaintiff's exhibit 2 near the letter "L" in Lazy Jean.

Q. How much of the course of the vein as it goes downward do you find that widened condition at that point?

A. At the point which I have just described it takes 100 feet in width to raise 20 feet in height, which shows a very flat vein, a flat ore body.

Q. And between the four hundred and three hundred what do you find?

A. Between the 400 and 300 in the section of country between the word "Lazy" in "Lazy Jean" and "S" in Switchback there is a large flat ore body.

Q. Well, of how great an extent, how far would the flattened condition exist?

A. The flattened condition exists over a section 130 feet in width and about approximately 200 feet long, something between 180 and 200 feet long.

Q. Now, after that flattened condition is shown in your intermediate, your 100, your 200, your 300 and 400, how is the dip of your vein after that is ended?

275 A. What dip does it continue on into the earth after the 400?

Q. Through each one of these, after your flat condition is ended?

A. It generally assumes the normal or probably a little steeper dip for a short ways, and assumes its normal dip, averaging about thirty degrees in the center portion of the mine. These flattened conditions, I do not wish to convey the idea that they are connected in any way. They are separate, local conditions as found in the different places.

Q. Yes, sir, I understand, but you have described all of them now that exist as far as you know, have you, and that will be shown you find in the actual working by covering quite a vertical length of stope to reach a very small difference in elevation, is that right?

A. Yes, sir; there is another flattened condition appearing in raise 314 west where the stopes are shown in plaintiff's exhibit 2;

I do not think I mentioned that before; it is simply another example of the same kind.

Q. Do those flattened conditions show any more or appear any more in going down easterly from the northerly and southerly apex than they do in going southerly onto the eastern and western apex?

276

A. They do not.

Mr. DINES: That is all.

Thereupon an adjournment was taken until 2:00 o'clock p. m. of this day, Tuesday, January 7th, 1913.

277 TUESDAY, *January 7th*, 1913—2 o'clock p. m.

Mr. DINES: The plaintiff now offers in evidence Exhibit No. 2.

Plaintiff's Exhibit No. 2 admitted in evidence without objection.

WILLIAM CLANCY resumed the stand for further redirect examination.

By Mr. DINES:

Q. Mr. Clancy, in speaking to you of the crosscuts that have been driven through the country from which it is shown whether or not the Stewart vein passes to the north of the line of the Osborn fault, I call your attention to the Fir tunnel as shown, a portion of it, on Exhibit No. 1, and ask you if you will please state to the court the length of that tunnel from its mouth down to the workings?

A. From the mouth of the Fir tunnel to the point where the Stewart vein was first encountered, near survey point 2513, the length is approximately 2000 feet.

Q. Is the length of the tunnel shown on Exhibit 1, or does it extend on further?

A. It extends onward several hundred feet.

278 Q. What is the entire length of the tunnel beyond that portion of what is shown on Exhibit 1?

A. Approximately 17 or 18 hundred feet.

Q. And what is the entire length of that tunnel?

A. My recollection is that the Fir tunnel is about 2600 feet in length from the portal to the point where it crosses the south side line of the Senator Stewart Fraction. That is roughly, and from memory, but it is approximately correct.

Q. You have already stated that what you have designated as the Osborn fault in your testimony is cut in this tunnel?

A. It is.

Q. Now, what does that tunnel show with reference to the vein to the north and east on out to the mouth of the tunnel?

A. It shows no vein, no ore bearing vein in place in the tunnel from the portal to survey point 2513.

Q. And for these several hundred feet of length out there, is there any evidence of any vein at all?

A. For a distance of approximately three or four hundred feet

in a northeasterly direction from survey point 2513 there
279 is no vein at all.

Q. Now, a question or two about the width of your vein. At these points where you have shown the apex of the vein, have you shown the width of the vein from wall to wall?

A. No, we have not. The apex, the heavy red line on the apex map represents the footwall of the vein, at its top, and it is shaded to represent the vein, but does not purport to show the entire width of the vein on exhibit 3.

Q. Then Exhibit 3 does not purport to show the width of the vein as it is in the ground?

A. No.

Q. You have stated already the variable widths of that vein. Is there any point in it at or near its apex where the width is shown that you can point out?

A. Part of the width is shown from the apex drift in a crosscut south from the apex drift opposite survey point No. 2519 on Plaintiff's Exhibit 1; 30 feet of the vein in width is shown by that crosscut, but the entire width is not shown there.

Q. I call your attention to the Exhibit marked "Section IV," looking west, scale one inch equals 30 feet——

280 Mr. DINES: I will ask the stenographer to mark this section Plaintiff's Exhibit No. 4.

Section 4 marked Plaintiff's Exhibit 4.

Q. Calling your attention to Exhibit 4, I ask you under whose direction and supervision this exhibit was prepared?

A. Under my direction.

Q. From what data was it made?

A. From surveys and from maps made from surveys under my direction and by myself.

Q. From this data and these surveys that you have made yourself, are you able to state whether or not this exhibit correctly represents as a cross section the matters that it purports upon its face to represent?

A. It does.

Q. What is indicated by the red line that I follow with the pointer from the black line marked Osborn fault along its course to the southern termination of that broad line at or near the word "Ontario?"

A. The upper part of the red portion bounded by the red line which you have described represents the hanging wall of
281 the vein from the point on its upward termination in the Osborn fault a short distance above the 100 foot level of the Stewart mine, downward through the stopes which are above the 200 foot level, downward to the 300 foot level, and on downward to the Ontario working.

Q. What is indicated by the black line marked "Osborn fault" which is shown at the easterly portion of Exhibit 4?

A. That represents the Osborn fault as it is seen upon the plane

of this cross section, and its relation to the workings in the Stewart mine near the 200 and 100 foot levels.

Q. What are the black lines on this exhibit that are marked solidly, four of them?

A. The black lines are claim lines, that is, as if the vertical plane were passed through each claim line; the line represents the intersection of the plane of the section with the plane of the claim line.

Q. And what line is the one furthest to the right of the exhibit or to the northeasterly part of the exhibit?

A. That represents the north side line of the Senator Stewart Fraction, that is, the intersection of a plane passed down-
282 ward through the earth, through the north side line of the Senator Stewart Fraction and the plane of the section.

Q. And the next line as I go from the line in question southwesterly?

A. That is the south side line of the Senator Stewart Fraction and the north side line of the Lazy Jean claim.

Q. And the next line as I proceed in a southwesterly direction?

A. The next line is the north side line of the Ontario Mining claim.

Q. What is the last line in black that is shown here?

A. The south side line of the Ontario Mining claim is shown near the red figures "IV" on Plaintiff's Exhibit 1.

Q. What is the waving line at the upper portion of Exhibit 4 which I follow with my pointer from the portion above marked in green "3400" and down below to 3100 at the right hand side?

A. The black line which you have described represents surface lines, the line of the intersection of the plane of the section with the surface.

283 Q. What do the green lines represent that extend throughout the exhibit from right to left?

A. The horizontal green lines which are marked upon Plaintiff's Exhibit No. 4 represent the intersection of the plane of the section with horizontal planes; that is, they are called elevation lines; they are supposed to be 100 feet apart.

Q. The figures on each side of the exhibit show what?

A. The figures on each side of the exhibit marked in green represents the approximate elevation above sea level of each of the lines at the end of which these figures appear.

Q. And the figures and letters 400 level at the bottom of the exhibit with some black lines there, one of them long and the other two somewhat round, what do they represent?

A. The- represent workings on the 400 foot level as cut by this section.

Q. Now, calling your attention to Exhibit 1, please indicate the line on Exhibit 1 through which the vertical plane which you have referred to is projected for the purposes of this cross section?

284 A. The line on Exhibit 1 through which the vertical plane cuts is marked in red in Roman numerals "IV" at the northeastern end of this line, and marked in Roman numerals in red "IV" at the southwestern end.

Q. Run your pointer along that line?

A. The line extending from the red letters "IV" at the northeastern end through the Senator Stewart Fraction claim as I indicate, southerly through the Lazy Jean and through the Ontario claim.

Q. And what objects would be shown upon a cross section projected along through that line?

A. All objects which are in the ground on the plane of the section as well as the mine workings and the position of the vein as determined from the location in the mine workings.

Q. I note on Exhibit 4 the top point here of the red lying against the black line marked "Osborne Fault;" what does that show?

A. It shows the top of the vein as we find it on section IV above the 100 foot level near the eastern face of Drift No. 105 east, on Plaintiff's Exhibit No. 1.

Q. And what does the lowest portion of the red lying up
285 against the black below that show upon Exhibit 4?

A. It shows the termination of the lower portion of the vein as shown by the working on the 200 foot level on Plaintiff's Exhibit 1 near survey point 112 near the bottom of the raise marked "Raise 216 East."

Q. And what does the solid red between those two points indicate?

A. It represents the vein as determined from the mine workings.

Q. Comparing the point that I first called attention to, that is, the upper point lying against the Osborn fault, with the red marked in the Ontario, please state what the difference in elevation is?

A. The difference in elevation is approximately 260 feet.

Q. What is the angle or declination from the same point, the uppermost point of this shown in Exhibit 4 down to the point immediately above the black line that I indicate here on the map, being a black line almost midway between the two longer black lines in the red on the same exhibit?

A. The inclination of the line which you have just described is approximately 35 degrees from the horizontal downward.

286 Q. And what is the declination from that point to the black immediately next following down in the red?

A. The inclination of the upper red line from the point that you have just described, the easternmost extension of the workings shown in black above the word "300 Level" is approximately 20 degrees downward.

Q. And from that point to the point where it crosses the southerly side line of the Lazy Jean, what is the inclination?

Mr. GRAY: Don't you think it would be just as fair to take the foot walls instead of the hanging walls?

Mr. DINES: Yes, I want to be just as fair as possible and I think the witness is trying to be perfectly fair.

Mr. GRAY: Slip it down to the footwalls.

WITNESS: I will take it in the middle.

Mr. GRAY: Take the footwalls.

Mr. DINES:

Q. What would be the hanging wall of the vein at that point?
A. The upper red line.
Q. And which would be the footwall?
A. The lower red line.

287 Q. Take it first on the hanging wall and next on the footwall, and then we will have them both.

Mr. DINES: Is that satisfactory, Mr. Gray?
Mr. GRAY: Certainly. I just noticed that it made some difference there.
Mr. DINES: I don't think it would make a particle of difference but I am perfectly willing for him to take it any way that you want it.

288 A. Approximately four degrees.
Q. For the hanging wall?
A. For the hanging wall downward.
Q. Now the footwall, and if there are two courses there, you can take both?
A. To get myself right, we are beginning at the point in the easternmost end of the Black working above the 300 level?
Q. Yes, sir.
A. About two degrees. The lower line is shown which you are evidently trying to obtain, is upward about four degrees.
Q. Take this up here which seems to be more upward than any other, take that, if you please, and let us have what it is on the foot wall of the vein?
A. The foot wall of the vein from the south side line of the Senator Stewart Fraction or the north side line of the Lazy Jean is upward of five degrees.
Q. Now, if you can find any other places that it is upward pick them out and take that first on your footwall if you can, that is, an upward place, pick it out and let us see what it is.

289 A. From an opening shown upon the cross section in the Ontario claim approximately seventy feet south of the south side line of the Lazy Jean as shown upon the cross section which is represented upon plaintiff's exhibit 1, by a drift near survey point 2567, the course of an inclination is upward at an angle of eight degrees for a distance of approximately seventy feet.
Q. Now, take the portion from there on down to the Ontario, the word "Ontario," and take it both on the hanging and on the foot wall so we can have the angle of inclination of each?
A. From a point on the hanging wall of the vein as shown upon plaintiff's exhibit 4, a point approximately 150 feet south of the north side line of the Ontario, the hanging wall has an inclination downward of approximately fifteen degrees.
Q. And what is the footwall?
A. The footwall has an inclination downward of approximately I will say nineteen degrees.
Q. Now, what is your course from your Ontario workings to the

apex as you have found it on this cross section and shown
290 it?

A. It is upward.

Q. And from the apex to the Ontario workings what is the course?

A. Downward.

Q. Now, please give the length in this cross section of the vein from its highest point to the point where it begins to flatten out?

A. The length of the vein as shown upon this cross section from its highest point to the point where it begins to flatten out is approximately 240 feet.

Q. Now, from that point to the point we will say the Ontario line, where it enters the Ontario claim, what is the length of the flattened portion—of that flattened portion?

A. Approximately 360 feet.

Q. And from there to the lowest red of the word "Ontario" in the Ontario claim, what is the length?

A. 420 feet.

Q. What is the course of the Osborne fault as indicated there on this exhibit four?

A. The course of the Osborne fault is not indicated,—that
291 is, by course I presume you mean the direction on a horizontal plane?

Q. Yes, sir, that is correct?

A. I say, it is not indicated.

Q. It is not indicated; do you know what it is; can you give it.

A. It is north seventy-five and north eighty west.

Q. Now, if you please, Mr. Clancy, taking the inclinations that you have given of hanging wall and footwall from the highest to the lowest portion of the vein, give us both walls and then the average dip. Can you calculate that?

A. Starting at the highest point and ending at its lowest point on each wall in a straight line?

Q. I will ask you to start at the highest point and go down to the flattest point where it becomes flat and make that one, give us that average dip, then from that point take the flat portion of the vein and give us the dip of both walls there: then take the dip of this portion of the vein, the lower portion of it, both the hanging wall and footwall, and with those together give us an average dip of hanging wall and the average dip of the footwall; can you
292 do that?

Mr. GRAY: It is a repetition.

A. It is rather a long calculation to figure such a thing as that; I would have to take the distance of each particular place; I can give you the average dip of the portions as shown upon the map and state them in terms of that kind very quickly, but to arrive at a correct average for the vein t aking each section——

Q. (Interrupting.) I do not believe you have given me the dip of the footwall of the vein from its highest point against the Osborne fault down?

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A. The average dip of the footwall from its highest point as it terminates against the Osborne fault to the point where the vein begins to flatten out near the 300 foot level of the Stewart mine is approximately 32 degrees.

Q. Well, if you take a line from the lowest point, a straight line from the lowest point to the highest point that the red shows on this exhibit—please do that and give me the inclination of that line.

A. The inclination of a line drawn between the point upon the hanging wall in the working marked Ontario upon plaintiff's
293 exhibit 4 and the highest point of the vein as it terminates on its upward course against the Osborne fault on plaintiff's exhibit 4, we have an inclination of approximately twenty degrees.

Q. And now taking the same point on the foot wall and bringing the line to the point on the foot wall here where it shows against the Osborne fault, please give us that angle?

A. The inclination of a line joining the highest point on the foot wall as it terminated against the Osborne fault a short distance above the 200 foot level on plaintiff's exhibit 4 and joining the point, the working marked Ontario on plaintiff's exhibit 4, is about thirteen degrees.

Mr. DINES: We offer exhibit 4 in evidence, may it please your honor.

The COURT: If there is no objection, it will be admitted.

The said map was thereupon received in evidence and marked Plaintiff's Exhibit 4 admitted.

Mr. DINES:

Q. I show you an exhibit upon which is written "section I, looking west, scale one inch thirty feet", which I will have marked for identification as plaintiff's exhibit 5, and ask you to please state
294 to the court what that exhibit is, under whose supervision or direction it was made and from what data it was made?

A. The map referred to, plaintiff's exhibit 5 is a cross section through the lines which are marked upon plaintiff's exhibit 1 with red "I".

Q. Put your ruler right on it lengthwise along the face of the map?

A. (Continuing:) At its northern most end, and a red "I" at its southern most end, the southwestern most end.

Q. On what exhibit?

A. On plaintiff's exhibit 1. That is also a cross section fulfilling the conditions which I have described of the cross section heretofore. The workings which are shown upon the map in black lines and marked with letters describing them are workings in the Stewart mine which were located by surveys made by myself, and the red lines show the location of the vein as determined by the location of the workings in the ground which were made by me.

Q. Please state whether or not exhibit 5 correctly represents the objects which it purports to represent on the cross section as shown in that exhibit?

—. ——.

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295 Q. Are there any projections outside of that plane on exhibit 5?

A. There are no projections outside of the plane of the cross section.

Q. Are there on exhibit 4. I neglected to ask you about that. You can look at it hurriedly.

A. No, there are no projections outside of the plane of the cross section, but I wish to explain that as not meaning between points, from other data—the vein is not projected because as shown upon the cross section we have no working in some point directly on the plane of the cross section, but from other data we know the location of the vein, and that would constitute a projection of another kind, but that is the vein just as it would appear upon this cross section if there were workings there.

Q. And that applies to exhibit 4, does it, as well as this?

A. It does.

Q. Please state the extreme point, the highest point of the hanging wall of the vein as shown on this section and give us the dip of that hanging wall at all portions that it is shown, for instance, where you see a change, take the first from here to here where
296 there seems to be a change of direction, then measure from there to the highest point there along the hanging wall, then measure it from that point to the next point where there seems to be a change and in that way cover the entire vein down to the point, that is, where the black line is drawn marked No. 11 fault, and then the hanging wall of the next portion of the vein here on down as far as it is shown in this exhibit, and take the foot wall in the same way and give us those declamations.

A. Beginning at the highest point as shown upon plaintiff's exhibit 5 in the hanging wall of the vein as shown, the hanging wall descends for a distance of approximately 100 feet at an angle of forty-five degrees. For a distance of approximately 150 feet the hanging wall of the vein ascends at an angle of approximately ten degrees, that is, from the end of the forty-five degree inclination which I have just described. From that point the hanging wall of the vein descends at an angle of approximately twenty-four degrees for a distance of approximately 110 feet. From that point the hanging wall of the vein descends at an angle of two degrees for a distance of approximately 110 feet. From that point the
297 vein descends at an angle of approximately twenty-five degrees for a distance of 320 feet; and then the vein encounters fault marked No. 11 fault. The position of this fault is determined by its location in the Ontario workings and in the Stewart workings.

Q. Is that the fault which you have heretofore testified to in your examination in reference to exhibit 1?

A. It is the fault which I testified to in reference to exhibit 1 which separated the ore bodies known as the May and the Gray in the Ontario mine from that known as the Frank.

Q. Is that indicated at about the point that I point to with this pointer as to the green lines coming up in the shape of an inverted letter "V" on exhibit 1?

A. That is the May drift to which you are pointing. The location of the No. 11 fault as shown upon plaintiff's exhibit 5 is on plaintiff's exhibit 1 between the southeast corner of the Senator Stewart claim and raise marked Frank No. 1 raise on the cross section.

Q. Of exhibit 1?

A. Yes, sir.

298 Q. Has that fault resulted in a displacement of a portion of that vein?

A. I wish to correct that testimony in answer to your previous question. I made a mistake on the cross section line that I was looking at.

The COURT: Yes, correct it.

A. The location of No. 11 fault as shown upon plaintiff's exhibit 5 is located on plaintiff's exhibit 1 between the drift on the 200 foot level marked drift 205 west near survey point 2062 and the 300 foot level as marked upon plaintiff's exhibit 1 near survey point 2113.

Q. Now, you can answer, after making that correction,—answer the last question. Will you read it? (Question read)—At that point?

A. It has.

Q. Have you been able to correlate the displaced portions of the vein and to measure the extent of the throw at that point?

A. We have.

Q. In what way?

A. On the 200 level of the Stewart mine on the plane of the cross section which is shown in plaintiff's exhibit 5 we have a work-

299 ing within thirty feet of the fault as shown upon exhibit 5 and on the 300 level we have a working which shows the location of the fault on the plane of the cross section 1 on plaintiff's exhibit 5 and in stopes immediately above this working we have the vein as shown upon the section. From that data we were able to plat the location of the fault and the location of the vein.

Q. Please measure the throw of the fault and tell us what the extent of the displacement or throw is?

A. (Continuing:) Which indicates a displacement of approximately 110 feet along the plane of the fault.

Q. How do you know it to be the same vein?

A. I know it to be the same vein as I have testified heretofore from plaintiff's exhibit 1 by ascending on mineable ore in the vein from the Frank ore body up through stopes and raises to the old lower Stewart tunnel level, thence following along the vein downward through the raise or stope to the 100 intermediate level and, referring to plaintiff's exhibit 2, through stopes on the 104 intermediate level on mineable ore down to the stopes above the 100 and 200 level, into the stopes above the 300 level of the Stewart mine, over to raise 314 west, down on the vein to drift 305 west, of

300 the Stewart mine, along this drift to the stopes above the Gray ore body and down through these stopes to the Gray drift.

301 Q. Taking a line from the lowest point of the hanging wall to the highest point of the hanging wall, please give the angle of inclination of Exhibit 5?

A. The angle of inclination of the line connecting the lowest point of the hanging wall of the level of the Silver King tunnel of the Ontario mine with the highest point of the hanging wall as shown on Plaintiff's Exhibit 5 is approximately 20 degrees

Q. Take it from the lowest point of the footwall shown in Exhibit 5 to the highest point of the footwall on the same exhibit and give us the angle of the inclination of that line?

A. The angle of inclination of a line connecting the lowest point on the footwall with the highest point on the footwall shown on Plaintiff's Exhibit 5 is approximately 20 degrees.

Q. What is the total distance from the lowest point to t-e highest point *point* of the vein as shown on Exhibit 5?

A. Approximately 1200 feet.

Q. Now, give us the difference in elevation between the lowest portion of the vein as shown on Exhibit 5 and the highest portion of the vein as shown on that exhibit?

302 A. 400 feet.

Mr. DINES: Plaintiff offers in evidence Exhibit No. 5.

Plaintiff's Exhibit No. 5 admitted in evidence without objection.

Q. I show you a map marked "Section 11" looking west, scale one inch equals thirty feet, and ask you what that represents?

Section 11 marked Plaintiff's Exhibit 6.

A. The Exhibit marked "Section 11" looking west scale one inch equals thirty feet is a cross section fulfilling the conditions of cross sections as I have described them and marked upon Plaintiff's Exhibit 1 with the red letters "11" at its northwestern end and "II" at its southeastern end.

Q. Under whose direction and supervision was that exhibit No. 6 prepared and from what data?

A. It was prepared under my direction from surveys made by myself and purports to show the workings in the Stewart mine upon the plane of the cross section as marked on Plaintiff's Exhibit 1.

Q. Please state whether Exhibit 6 correctly represents on
303 that cross section the objects that it purports to represent?

A. It does.

Q. Are there any projections outside of the plane of that vertical section on Exhibit 6?

A. There is a projection of five feet outside of the plane of the section onto the plane of the section of the raise which is shown at the top of the drift marked "Apex Drift" on Plaintiff's Exhibit 6. This raise is the top of raise No. 4 east as shown on Plaintiff's Exhibit 1. The cross section does not go along the course of the raise; it begins at the top of the raise and passes out of the raise, and on this cross section it is shown as if it were in the raise.

Q. What is the purpose of showing that raise at that point in the cross section?

A. The purpose of the cross section is to show the position of the

vein in the ground. The cross section begins at the top of the raise——

Q. Why is the upraise projected in that particular way that I call your attention to there?

A. It is only five feet away, and we wished to show the
304 position of the vein, and the raise is in the cross section at the top.

Q. Now please give the entire distance from the lowest point on the hanging wall of the vein as shown on Exhibit 6 to the highest portion of the hanging wall as shown on the same exhibit?

A. The entire length of the hanging wall?

Q. Yes, of the hanging wall, the distance between those two points.

A. Approximately 1000 feet.

Q. What is the angle of inclination between the lowest point of the hanging wall shown on this exhibit and the highest point of the hanging wall?

A. The angle of inclination of a line connecting the point on the hanging wall which is the lowest point shown on Plaintiff's Exhibit 6 and the highest point of the hanging wall shown on Plaintiff's Exhibit 6 is approximately 30 degrees.

Q. And what is the angle between the lowest point of the footwall and the highest point of the footwall shown on the same exhibit?

A. Approximately 35 degrees.

305 Q. What is the difference in elevation between the lower portion of the vein shown on this exhibit and the highest portion?

A. The difference in elevation from the lowest point of the vein as shown upon this exhibit and the highest point as shown upon this exhibit is 440 feet, approximately.

Q. What is the dip of the vein from its highest point as shown on this exhibit to the point where the vein rolls or flattens for a space?

A. The inclination of the vein as shown on this exhibit from the highest point to the point where this flattened condition is approximately——

Q. Take it first on the hanging wall side?

A. Approximately 45 degrees.

Q. And what distance is that?

A. A distance of approximately 130 feet.

Q. Now, from there to the extreme of the flattened portion of the vein on the hanging wall and on the footwalls too, give us the angle and distance?

A. The inclination is upward at an angle of approximately 5 degrees for a distance of approximately 100 feet.

306 Q. Does the vein at the highest point there go to the surface or is there some wash immediately underneath the surface?

A. For a distance of ten feet along the inclination of the vein there is wash from the surface downward.

Q. Now, excluding the wash from the exhibit there shown, does that make any difference in those angles that you have given?

A. No.

Q. Or with the elevation?

A. No, the vein would end; the surface wash would fill up the last ten feet of the fissure as shown here, instead of showing the fissure upon the outside, in the air.

Q. Measure from the point that you have last given on a horizontal at the termination of the flat portion of the vein, down to the extreme and give us the angle of inclination and the distance?

A. A line joining the point on the hanging wall at its lowest point as shown on Plaintiff's Exhibit No. 6 and the highest point in the vein above the workings shown near the letter "L" in the
307 words "Lower Stewart Tunnel," the angle of inclination on that line is approximately 30 degrees, and the distance is approximately 750 feet.

Q. What are the lines spaced in black, marked "Osborn Fault," what do they indicate?

A. They indicate the intersection of the Osborn fault with the plane of the section as nearly as can be determined from the workings that we have in the mine.

Mr. DINES: We offer Exhibit 5 in evidence.

Plaintiff's Exhibit No. 5 admitted in evidence without objection.

Q. Here are some other sections that have come in since. I show you an exhibit to be marked for identification Plaintiff's Exhibit 7 on which is written "Section III" looking west, scale one inch equals thirty feet, and I will ask you under whose direction and supervision that was prepared and from what data?

A. It was prepared under my direction and supervision from surveys made by myself, and purports to show the workings in the Stewart mine and the location of the vein is shown in red and the position is determined from the location of the workings.

Q. State whether that exhibit correctly represents the mat-
308 ters and objects that it purports to represent upon its face?

A. It does.

Q. The red on Exhibit 7 indicate-, as on the other exhibit, the position of the vein in that cross section?

A. Yes, sir.

Q. Please indicate on Exhibit 1 the line along which the vertical plane is projected from which this cross section is made; lay your ruler along it.

A. The line along which Plaintiff's Exhibit 7, the vertical plane is passed, is in the position which I indicate by my ruled, marked with the Roman numerals "III" at its northern and southern end.

Q. Please give us the difference in elevation between the most northerly portion of the hanging wall of the vein as shown on Exhibit 7 and the lowest position of the hanging wall as shown on the same exhibit?

A. 410 feet.

Q. What is the angle of inclination of the hanging wall of the vein measured on a straight line between the points that it is shown lowest on the exhibit and the point of its termination highest on the exhibit?

309 A. The inclination of a straight line connecting the point of the hanging wall which is shown highest on Plaintiff's Exhibit 7 and the point on the hanging wall which is shown lowest on Plaintiff's Exhibit 7 is approximately 35 degrees.

Q. And from the lowest point of the footwall to the highest point of the footwall as shown on the same section?

A. My answer to the previous question should have been 25 degrees instead of 35 degrees, and the inclination of a straight line connecting the lowest point of the footwall with the highest point of the footwall is also approximately 25 degrees.

Q. What is the distance between the lowest and the highest portions of the vein as shown on Exhibit 7?

A. Approximately 1080 feet.

Q. What is the angle of inclination of the hanging wall as it starts from its highest point until it comes to the bend where there is a change in direction?

A. The angle of inclination of the hanging wall from its highest point is downward at an angle of 12 degrees for a distance of approximately 50 feet.

Q. And from that point down to the portion here where
310 there is another change of direction what is the inclination?

A. The inclination downward from the point which I just described is approximately 40 degrees for a distance of 120 feet.

Q. Take the next section where there seems to be another change from the same point, where there are two changes really, and you can give us both of them. It goes up for a distance and then down again?

A. From the point which I have just described the angle of inclination of the hanging wall is upward at an angle of 15 degrees for a distance of approximately 50 feet, then for a distance of approximately forty feet it is practically horizontal.

Q. And from that point on to the next, taking the hanging wall?

A. Then it turns downward at an angle of approximately 55 degrees for a distance of 40 feet and from that point the inclination downward of the hanging wall is approximately 15 degrees for a distance of 250 feet, and from that point the angle of inclination of the hanging wall is downward approximately 35 degrees for something over 400 feet—approximately 400 feet.

311 Q. I call your attention to some workings that are shown here on the right hand portion of this exhibit as we are facing it, and ask you what those are?

A. The workings marked in black north of the workings which are shown near the red band upon Exhibit 7 are the workings which are shown along the section line marked in red "III" at the northerly end and "III" at the southerly end, and are shown crossing this line in Plaintiff's Exhibit No. 1, marked "Old Lower Stewart Tun-

nel," "Deering Crosscut" and another working marked "Drift No. 2 East" near survey point 9536.

Q. I will ask you if those workings have anything to do with this vein?

A. They have nothing, as far as I know.

Mr. DINES: We offer Plaintiff's Exhibit No. 7 in evidence.

Plaintiff's Exhibit No. 7 admitted in evidence without objection.

Q. Now, take your next exhibit. I show you a map marked "Section VI" looking west, scale one inch equals thirty feet, which will be identified as Plaintiff's Exhibit No. 8, and ask you
312 under whose supervision and direction this exhibit was prepared and from what data?

A. It was prepared under my supervision from data obtained from surveys made in the Stewart mine by myself.

Q. State whether or not Exhibit 8 correctly represents the object that it purports to represent in the plane of that section as shown on its face?

A. It does.

Q. Please designate on Exhibit No. 1 the line through which this vertical plane of this section is projected?

A. The line on which the vertical plane of section VI, Plaintiff's Exhibit No. 8, is projected is marked on Plaintiff's Exhibit 1 by red letters "VI" at its northeastern end and the red letters "VI" at its southwestern end.

Q. How is the vein indicated on this exhibit 8?

A. It is marked in red.

Q. Please give us the total distance of the vein as shown from its southern portion, the lowest portion, to its highest portion in the plane of this section?

A. Approximately 1050 feet.

Q. Please give us the difference in elevation of the lowest and highest point of the hanging wall?

A. The difference in elevation between the highest por-
313 tion of the hanging wall and the lowest portion is approximately 200 feet.

Q. Please give us the difference in elevation between the lowest point of the footwall and the highest point in the footwall in the plane of this section?

A. The difference in elevation between the lowest point of the footwall and the highest point of the footwall as shown on this section is approximately 145 feet.

Q. Please give us the angle of inclination of a straight line drawn from the lowest point of the hanging wall to the highest point of the hanging wall in this exhibit?

A. The angle of inclination of a line drawn between the lowest point of the hanging wall and the highest point of the hanging wall on this exhibit is downward at an angle of approximately 10 degrees.

Q. And the inclination of a straight line drawn between the lowest

point of the footwall and the highest point of the footwall on this exhibit?

A. The angle of inclination of a line connecting the lowest point and the highest point of the footwall as shown upon this exhibit is approximately 6 degrees.

314 Mr. DINES: We offer in evidence Plaintiff's Exhibit No. 8.

Plaintiff's Exhibit No. 8 admitted in evidence without objection.

Q. I show you an exhibit upon which is printed "Section V" looking west, scale one inch equals 30 feet, which is to be identified as Plaintiff's Exhibit No. 9, and ask you under whose supervision and direction this exhibit was prepared and from what data?

A. It was prepared under my supervision from data obtained from surveys which I made in the Stewart mine, purporting to show the workings in the Stewart mine which appear upon the plane of this section, and also the vein as located by the position of the workings.

Q. Does this Exhibit 9 correctly represent the position of the object that it purports to represent in the plane of this section?

A. It does.

Q. I note on this Exhibit 9 a black line marked "No. 11 Fault". Is that the same fault that you have identified on Exhibit No. 5?

A. Yes, it is the same fault.

315 Q. Please give us the difference in elevation on this exhibit between the lowest portion of the vein as shown on the exhibit and the highest portion?

A. Approximately 385 feet.

Q. What is the difference in elevation between the portion of the vein, of the hanging wall of the vein as it goes against Fault No. 11 and the highest point of the hanging wall in the same vein?

A. Approximately 235 feet is the difference in elevation between the highest point of the hanging wall as shown upon Plaintiff's exhibit No. 9 and the lowest point of the hanging wall as shown terminating on its downward course against No. 11 fault.

Q. What is the angle of inclination of a straight line drawn between the lowest point on the hanging wall of the vein at the fault and the highest point of the hanging wall of the vein as shown on the exhibit?

A. The angle of inclination of a line joining the highest point of the hanging wall of the vein as shown on Plaintiff's Exhibit 9 and the point where the hanging wall of the vein is shown underneath No. 11 fault is approximately 20 degrees.

316 Q. And from the lowest point of the footwall and the highest point of the footwall, from the point of the footwall against No. 11 fault and the highest point against the Osborn fault, what is the angle?

A. Approximately 15 degrees.

Q. What is the extent of the displacement of the vein in that fault?

A. The extent of the displacement of the vein by that fault in the

plane of cross section V as shown by the cross section is approximately 130 feet.

Q. Are you able to correlate these two portions of the vein separated by the fault in question in that place in any way, if so, how?

Mr. GRAY: I object; that has already been answered two or three times across the No. 11 fault. I don't think it is necessary to repeat it.

Mr. DINES: All right, if counsel is willing to stipulate that it would be the same evidence in reference to the same fault——

Mr. GRAY: Well, he has testified to it two or three times, and traced it up to the old Stewart tunnel level and back down again and around.

317 Mr. DINES: Very well.

Q. Now, measuring the other portion of the vein in this Exhibit No. 9 on the other side of the fault, please give us the length of that section of the vein?

A. The length of the section of the vein above No. 11 fault as shown on the cross section V is approximately 300 feet.

Q. Give us the angle of inclination from the lowest point of the hanging wall on that section and the highest point?

A. The angle of inclination of a straight line connecting the lowest point of the hanging wall as shown near the working marked "Ontario" and the point the hanging wall is shown on the upper side of No. 11 fault is approximately 12 degrees.

Q. And from the lowest point of the footwall to the highest point of the footwall on that section of the vein?

A. The angle of inclination from the lowest point to the highest point as heretofore described is upward approximately at an angle of 10 degrees.

Q. Give us the angle of inclination and the distance along the hanging wall of the first portion of the vein, the higher portion of it, to the point where there is a change in the angle of

318 the inclination?

A. The angle of inclination of the portion of the vein descending from the highest point of the hanging wall as shown upon section V is approximately 40 degrees for an approximate distance of 250 feet.

Q. And measure the next angle of inclination along the hanging wall and give us the distance measured by that change?

A. The angle of inclination of the hanging wall of the next section of the vein is approximately 6 degrees upward for a distance of about 80 feet.

Q. How is the footwall of that same section?

A. In the same section the footwall has an inclination downward of approximately 10 degrees for a distance of 170 feet.

Q. Now take the next section of the vein shown there and give us as well as you can the angle of the inclination of the hanging wall?

A. A straight line joining the point where the hanging wall of the vein is shown on section V at the intersection of the south side line

of the Senator Stewart Fraction and the point where the
319 hanging wall is shown against the under side of No. 11 fault, the inclination is downward at approximately 7 degrees.

Q. And the footwall of the same section of the vein?

A. The footwall of the same section of the vein heretofore described the angle is downward at an angle of approximately 3 degrees. The distance is approximately 380 feet.

Mr. DINES: We offer Plaintiff's Exhibit No. 9 in evidence.

Plaintiff's Exhibit No. 9 admitted in evidence without objection.

320 Mr. DINES: Take the witness.

Thereupon a short recess was taken.

Recross-examination.

By Mr. GRAY:

Q. What is the dip of the Clancy fault?

A. At the point marked "W" on plaintiff's exhibit 1 at the top of the raise two west, the dip is approximately thirty degrees in a northwesterly direction.

Q. Dipping about like that, in that direction (indicating)?

A. Northwesterly, yes, sir.

Q. What is the course of the dip there; you say northwesterly. Give me the strike of it and it is easy enough to figure it; what — the strike of the Clancy fault?

A. Approximately north 30 east.

Q. And the inclination is thirty degrees?

A. Northwesterly, yes, sir.

Q. In this 85 level, does that show all of the workings from that level?

A. It shows all of the workings at the elevation at which it is marked. There is a raise, a vertical raise in the end of the
321 85 foot level, in the southeastern end as shown upon the map, extends upwards fifty feet vertically.

Q. That is not shown on here at all. Now, in your No. 7 cut that shows all of the workings there?

A. That shows the total extent of No. 7 cut.

Q. Those workings that you have called to my attention, the 85 level and the No. 7 cut, are the only workings which have been put in there for the purpose of developing that fault or the vein on the upper side of the fault?

A. I do not wish to be misunderstood as to the 85 level; that level was given before I arrived at the Stewart mine. The No. 7 cut was driven for the purpose of finding the vein beyond the Clancy fault. We drove the No. 7 cut to its present extent, and seeing it opposite the 85 level, then the country had already been cross cut there was no use looking for it in there, so we did not extend it any further.

Q. Those are the only workings, however, driven for the purpose of developing that vein above the fault?

A. They are, because the surface was near on the other side.

Q. What is the elevation of the top of this raise at the
322 point "W" where you have developed the Clancy fault?

A. The topmost portion of the raise is approximately 2932. I beg your pardon; I meant 2032; the elevation of the bottom of the raise is 2919, and the raise is up 110 feet.

Q. What are the little crosscuts or drifts north and south from the 85 level?

A. Those are drifts driven upon a fault seam, a gouge seam.

Q. Have you been in and surveyed that working yourself?

A. I have surveyed it with a compass and tape; I have made no instrument survey of it, if you wish to make the distinction between them.

Q. No, I do not. That is called the level; is that driven on anything?

A. The workings along which the words "85 foot level" appear is a crosscut driven from a raise which is marked Samuel's raise.

Q. What do you call it a level for?

A. Well, it is a horizontal working, and all those horizontal workings, if they are of any extent, they call them levels; those names appeared upon the maps at the time I came here and
323 we just carried the names on.

Q. I thought they called them crosscuts when they are run along the vein?

A. Take, for instance, the old lower Stewart tunnel level, or any other workings on that horizontal plane, the approximate horizontal plane- are called the levels.

Q. Part of it was called the Deering Crosscut?

A. It is; that is a crosscut through the country, crosscutting the country, not drifting on the vein.

Q. I am not arguing with you; I was just wondering why you called that a level?

A. Take stopes or a crosscut and a drift, I presume, you would call that a level, it is rather technical, though, just what it would be.

Q. Now, the fact is in that part of the mine there has really been less development work than almost any place else in the property, isn't that true, in between your upper Stewart ore bodies and the lower ore bodies below the Clancy fault?

A. There is nothing to develop in there.

Q. I say there has been less development there than practically any place else upon the property, isn't that true, just a couple of workings put in for the purpose of developing the fault?

324 A. You have a section of country which you are describing approximately 400 feet long by something over 200 feet wide, and it is crosscut completely, it is completely developed.

Q. Where is the vein 80 feet wide; you said something about the vein being eighty feet wide; I wish you would show the court?

A. As we have determined the location or the limits of the ore body on the 400 level as near as we have been able to determine them, near the drift 415 W. the vein is over eighty feet in width, and in the stopes above the drift 4 east we have the actual workings on commercial ore of fifty feet in width, and from a waste

raise which we have driven into the hanging wall, we know the mineralization extends beyond that, so therefore we know that in some places the vein has a width of eighty feet or greater.

Q. Limiting the width of the vein to the mineralization?

A. To the definite mineralization as we could find it.

Q. Do you mean to the limit of the commercial ore or to the limit of the mineralization?

A. No.

325 Q. All right. Now, just tell me what you do mean?

A. I am extending it just as a man would extend the limits of his wheat field; if we should see wheat growing in there so we could distinguish it, for instance, we run a crosscut on the vein and in the hanging wall of the drift we have a pay streak of five feet of first class ore and that gradually diminishes until pure country rock is found, then as soon as we reach that, until we cannot find any mineralization, that is the limit of the vein.

Q. As soon as you get to the point where you cannot find any silver or lead, that you consider the limit of your vein?

A. We consider that the limit of our vein when we cannot find any more silver or lead.

Q. And in giving the width, that is what you intended to imply as the limit of this vein on the hanging wall side?

A. Well, on both sides that is the limit of our vein. We do not mean to say that the shipping ore is the limit of the vein; we mean to say as I have described the limit.

Q. You say in the upper workings above the tunnel level that the vein is fifty feet wide on commercial ore?

A. In the stopes; there was stopes shown fifty feet wide.

326 Q. The stopes themselves are fifty feet wide?

A. On a horizontal plane the stopes are fifty feet wide, yes, sir.

Q. That would not be at right angles?

A. I know what you mean; the vein is not fifty feet wide in commercial ore.

Q. What stopes are those which are fifty feet wide; just show me, lay your ruler where you say they are?

A. There is a floor of stopes shown to be fifty feet wide next to the last floor as shown underneath drift marked apex drift.

Q. You have referred to the number 11 fault. Where are the other ten?

A. Because there is a fault known as No. 11 is no reason why there are ten others or any other number; that is an arbitrary name that is given it.

Q. I know, but you have at some time given some other faults that you found in there, numbers 1 to 10 inclusive, haven't you?

A. No, sir.

Q. Never have?

327 A. You mean that there are faults numbered from one to ten and each one represents a fault, each number represents a fault?

Q. I am asking you if you have any other faults that you have given numbers to in that property?

A. Yes, sir.

Q. Where are they?

A. The fault which has been heretofore referred to as the Clancy fault was given the name No. 1 fault; the fault plane which caused the fold but does not separate the vein, through the working marked upon plaintiff's exhibit 1 as east No. 3 crosscut, was given the number of No. 5.

Q. That is the one you have referred to as folding the vein and making it flat just below the Stewart tunnel level as shown on here?

A. Well, that is not accurate to say it is just below the Stewart tunnel level, because the——

Q. On that level and just below?

A. It is on the level in the eastern portion between drift No. 5 west and drift 4 east, and it is below the level on the 104 intermediate; it causes a flattening of the vein there or a folding of the vein, but not a separation.

328 Q. Where else?

A. There is another fault that has a similar action, does not separate the ore body, a minor fault, called No. 10.

Q. Where is that?

A. On the 300 level. It has a position approximately as I have placed my pointer, extending from near survey point 2050 to two and along a working shown from survey point 2045 to 2013, as I have indicated with my pointer.

Q. Do you find that on the 400 level too?

A. I have never seen it to accurately and certainly identify it on the 400 level.

Q. It lines up, does it, with the one between—what is this, the Gray and the May?

A. No, sir.

Q. All right. You have seen it you think out on the 400 level some place?

A. In the south crosscut on the fir tunnel on the 400 level near the place which is marked R-400 K, a short distance south of that there is a fault claim with some gouge on it, and that may be the No. 10 fault, but I am not sure of that because in the stopes above where is should appear it does not appear.

329 Q. Now, where are the others?

A. If I have got to stop and name all the little faults in this mine I have a big job before me.

Q. No, just the others that you gave numbers to? Where is No. 2?

A. I have not any number two.

Q. How did you happen to jump that number?

A. I thought I would leave room between for a few more.

Q. We have No. 1 and No. 5; did you have No. 3 or No. 4 any place?

A. No, sir, I do not think we have any No. 3 or No. 4.

Q. All right. No. 6?

A. No.
Q. Or 7?
A. No.
Q. Or 8?
A. No.
Q. Or 9?
A. No.
Q. You left quite a few numbers in between?
A. I expected to find a few more in between.

Q. Yes, sir; as I understand you now, what you have spoken
330 of as the fold in the vein, the vein on its downward course southeasterly is rendered flat and folded somewhat by a fault which runs—what is the course of that fault, first, approximately?

A. The approximate position of the fault as near as I have been able to determine it from all the workings which I have seen lays on the 104 intermediate level in the position which I will mark with the blue line; that is, the approximate position——

Q. What is its course?

A. The approximate course is north 5 east, is my recollection of the fault on the——

Q. Almost north and south?

A. Almost north and south; and from the working drift No. 5 west and in the stopes above drift 5 west and drift No. 5 east and in the east No. 3 crosscut the position of the fault placed along the blue line is its approximate position as near as I have been able to trace it, something like that (indicating).

Q. A general course——

A. It is another crescent.

Q. It is another crescent, yes, sir.

331 A. It starts out pretty near north and south and I followed it up in the stopes and I found it, found it in the east No. 3 crosscut, we found a fault which corresponds and that is the position that I would place it in.

Q. And it dips to the west at what angle?

A. Various angles, from 20 to 30 or 35 degrees.

Q. That faults causes the vein on its downward course from its western apex to flatten out for a distance there doesn't it?

A. It does.

Q. Those blue lines you have marked on there, suppose you mark those at the ends No. 5, then we will know. That is on exhibit No. 1?

A. (Witness marked map.) I marked "tunnel level" on that—No. 5 fault, tunnel level, to designate the position.

Mr. GRAY: Mark this for identification.

The said map was thereupon marked Defendant's Exhibit "A" for identification.

Q. This exhibit "A" for identification is a copy of the map which you made and attached to your affidavit in this case, isn't it?

332 A. Yes, sir.

Q. Would you indicate on there where your apex is dis-

closed in the so-called apex drift. I would like to have you plat that on there, if you could.

Mr. DINES: Was the apex drift driven at the time that blue print was made?

Mr. GRAY: No, sir. He can put it on there just the same, though.

The WITNESS: You wish to have the point where the apex is shown in the apex drift?

Mr. GRAYS: Q. Yes, sir.

A. (Witness marked on defendant's exhibit "A".)

Q. That is the point W-prime, isn't it?

A. Yes, sir.

Q. Now, give us the other two points, W2-prime and the point where it is shown up in the——

A. (Witness marked on defendant's exhibit "A".)

Mr. DINES: What is the scale of the blue print?

Mr. GRAY: 100 feet to the inch.

Q. The cross section 1, roman I, Mr. Clancy, will you lay this straight edge upon the stope map so as to show where that runs through the stopes?

333 A. That is approximately the position of the cross section on the stope map.

Q. Just run it down through those stopes in the Frank ore body.

A. (Witness illustrated.)

Mr. GRAY: Can your honor see that?

The COURT: Yes.

Mr. GRAY:

Q. That cross section is so laid that it enters the Frank ore body in one of the upper stopes extending diagonally through the stopes in a southwesterly direction, doesn't it?

A. Yes.

Q. What is the course of that cross section 1?

A. The direction——

Q. Yes, sir.

A. (Continuing:) —of cross section 1 as shown upon plaintiff's Exhibit 1 is approximately south 12 degrees west.

Q. The strike of the vein of the Frank ore body, of the vein in the Frank level and in the stopes was what?

A. I think I have stated south forty west; that is very close.

Q. A little less than that?

334 A. South 39 west.

Q. Somewhere along there. And its inclination was what; what did you say?

A. I have forgotten the exact dip. I think probably 55 degrees, probably 60 degrees; it is very steep there; I have forgotten just what I did give this morning.

Q. Now, the Roman five—just lay the straight edge for that across your stope map?

A. Cross section No. 5 is parallel to the east end line of the Senator

Stewart Fraction and is shown on the stope map in the direction of the straight edge.

Q. That enters some of the upper stopes and diagonally extends through to the level, doesn't it?

A. It does.

Q. What is the course of that section?

A. Section 5?

Q. Yes sir.

A. It is parallel to the east end line of the Senator Stewart Fraction; it is south 24 degrees west.

Q. Yes, sir. The reason the cross section five shows a downward inclination on the Frank ore body is because the plane of the section is so laid as to extend diagonally through that ore body
335 entering the higher stopes and going down through them on a diagonal line until it cuts the floor of the Frank drift?

A. You speak of diagonally, do you mean making an angle with the true strike?

Q. Yes, sir.

A. It does make an angle with the strike.

Q. With the strike of the vein?

A. Yes, sir.

Q. The course of sections six, four and five are all parallel with the east end line of the Senator Stewart Fraction?

A. Absolutely.

Q. The course of section two is what?

A. Approximately south 66 degrees east.

Q. The course of section 3 is what?

A. The course of section 3 is south 1 degree east.

Q. Almost north and south?

A. Almost north and south.

Q. An infinite number of cross sections could be prepared commencing at a point, say, where this red apex so-called passes through the east end line of the Senator Stewart Fraction claim, could
336 be extended at almost any angle in a southerly or southeasterly direction, could they not, and almost infinite number of cross sections?

A. Construing that question like you, you can make an infinite number of cross sections of a piece of ground, yes, sir.

Q. Yes, sir, and each of those cross sections, if made from different points would show a different inclination upon the plane of the section, wouldn't they?

A. Show a different inclination?

Q. A different inclination of the vein, wouldn't they? East cross section would show a different inclination?

A. An infinite number of cross sections drawn in an infinite number of directions would show a different inclination of the vein?

Q. Yes, sir.

A. Broadly, I think your answer is Yes to that question.

Q. And your inclination which you give to the vein would depend entirely upon the point which you took for the beginning and the ending of your cross section, the two points, wouldn't it?

337 A. The plane of the section, the inclination of the vein?
Q. As shown upon the plane of that section?
A. As shown upon the plane of the section would depend in this particular case whether they were taken parallel to the end line or otherwise.
Q. Depend upon where you took the section; isn't that true?
A. I don't know what you—you get me a little bit too far into the infinite for me to quite follow you.
Q. All right. You could take a section which would show an inclination of the vein, an apparent inclination of the vein downward as you have upon these sections which would show even a greater inclination downward than any of the sections which you have prepared; isn't that true?
A. I don't think so. I think my recollection is that I tried several cross sections and found that section 2 marked with the two I's in red at the top and bottom, or the north and south of the section, was the section which shows the greatest inclination. For a short distance you might find a section which would show a greater inclination.
Q. How about a section which would be drawn approxi-
338 mately parallel along the south side line of the Senator Stewart Fraction?
A. That would only show an inclination of approximately thirty degrees from the tunnel level, old lower Stewart tunnel level, down; there are flat places along there (indicating).
Q. Yes, sir. Well, from the point "W," how about it?
A. It would show probably a little more than thirty degrees, but my recollection is that section along that line would not show as a great an inclination as section 2.
Q. From up here at the point (indicating)?
A. From the apex.
Q. From the apex drift here, this raise?
A. From the apex as shown in the raise 4 east.
Q. Yes, sir. Now, assuming that you had an apex represented by the top of this map and that a claim was laid upon that vein as this—the side line of which, a plane representing the side line would pass along vertically the side of the map, you could get a downward inclination on that vein from any point on the side of that claim?
A. Not parallel to the end line you could not.
Q. Just read the question. (Question read). From any
339 point on that plane, couldn't you?
A. Yes, sir.
Q. Yes, sir; to some part of the vein. It would not make any difference how far down along the line you went to begin your section?
A. You get a downward inclination in some direction.
Q. The section- 1, 2, and 3, of course, are not parallel to the end line of the Senator Stewart Fraction?
A. No, they are not.
Q. You say you tried to make several other cross sections—or

several other sections along the vein which would show the vein on its downward course, didn't you?

Mr. DINES: I do not think the witness stated that.

The WITNESS: I said that I tried several other sections which would show a greater dip.

Mr. GRAY: Yes, sir.

A. And concluded to use section 2 as showing the greatest extent in dip or inclination. The word "dip" is not accurate.

Q. No, I understand that it is not. There was one of those sections that showed the Clancy fault; which one was that? Where is the Clancy fault shown on that?

340 Mr. DINES: I would thank you, Mr. Gray, as those are designated as plaintiff's exhibits, if you will kindly refer to them as such.

Mr. GRAY: Exhibit 7?

A. The plaintiff's exhibit 7, the Clancy fault is at the upward termination of the vein, as shown by the top of the red—it is not shown here, but it is in the position as indicated by the working outlined in black near the letter "S" in the word "Senator" of Senator Stewart Fraction.

Q. The termination of your red vein here at the top upon that section is supposed to show the termination of the vein against that fault, isn't it?

A. The fault is marked there in lead pencil and has not been marked in blue as it should have been marked. It would appear as a line upon this section.

Q. I thought that vein dipped to the west?

A. It would, that is true.

Q. Then it is not accurate so far as that is concerned?

A. The fault would appear—the fault cuts the vein off just as shown in this working; the vein stopped just as it is shown there.

Q. Didn't it stop in that way (indicating)?

341 A. The fault does not dip into the plane of the section, but it would show a distorted dip if the fault was projected on it.

Q. How far would it have to dip in order to get out onto the section—five feet?

A. No; the fault extends at an angle of approximately forty degrees with the plane of the section, so it would show a distorted dip if placed upon it. The accurate way to show that would be to place some blue there so as to show the top of the vein was against the fault.

Q. You show a flattening here on this exhibit 7 between 104 intermediate and what I presume is the Stewart?

A. That is as it appears upon this section?

Q. Yes, sir. It would indicate that the vein was somewhat flat in here. As a matter of fact, the dip of the vein at that place is very steep, isn't it?

A. That is simply due to the way of the change of the strike in the vein at that particular point.

Q. Yes, sir; the vein is very steep in its upward course away from——

A. At this particular section?

Q. Yes, sir; what is the dip of the vein in there?

342 A. Referring to plaintiff's exhibit 1, section marked with red three I, at its northern extremity, and III at its southern extremity, the plane of the section is shown intersecting the old lower Stewart tunnel level near survey point 9516. The tunnel level, the old lower Stewart tunnel level, extends almost parallel to the line of the section for a distance of slightly over 100 feet, probably 120 feet, which explains the condition as found upon the section.

Q. That really represents practically the true course of the vein in there?

A. The section at that particular point which I have just described is parallel to the course of the vein for that specific distance.

Q. Yes, sir. Now, of course, you do not intend to say to the court by these sections which you have prepared that the vein is disclosed and is shown as you have painted it in red upon the sections?

A. I mean if you went downward upon the section just as it is shown, if an opening could be made through the earth, a vertical opening, you would find the vein as it is shown upon the section.

343 Q. Yes, sir, but no such openings have ever been made except those which you have depicted upon the section?

A. The openings which were on the plane of the section, are depicted upon the section, and openings near by, show the location of the vein and from that we placed the vein upon the section.

Q. Projected it upon the section in the places between the actual openings which you have shown upon the sections; that is true?

A. We have placed the vein from the position shown from other openings projected upon the section.

Q. Will you explain to the court why you have not prepared any sections except—the one section II-II is not, but all of the other sections that you have prepared extend to the ore bodies in the Ontario which have actually been opened up by the defendants, do they not?

Mr. DINES: I object to that question, it assumes something that is not shown—but I have no objection to the witness answering.

Mr. GRAY: It is shown.

Mr. DINES: It is not, but on the contrary it is true, I will inform the counsel, that we will give you enough cross sections

344 before you are through with this, we think, to satisfy you. We have other models coming to show you——

Mr. GRAY: I hope it won't take you as long to introduce them as it did these.

Mr. DINES: We will try to satisfy you. I do not want you to be misled to think we do not have any other cross sections; we have them plentiful in every way that you could ask.

Mr. GRAY: Read the question. (Question read.) All of the sections except II-II extend over?

A. The reason the cross sections are shown as they are, especially cross section 5, 4 and 6, was upon advise of counsel who informed us that our sections should all be made parralel to the end line, that that controlled our rights in the matter, and other sections are immaterial, and he wanted more sections than we have parallel to the end line, and for that reason we made our section parallel to the end line.

Q. Those three were prepared on advice of counsel. On whose advice were one and three prepared?

A. One and three were prepared to show——

Q. First, on whose advice; was that your own, independ-

345 ent?

A. The one, two and three were prepared by myself principally. I asked advice from other men who will be witnesses in the case, but those are preliminary sections, that the sections which were prepared parallel to the end line, and we had one section parallel to the end line which is shown by the preliminary hearing, which corresponds to section 6, it was described in the preliminary hearing, I believe section BB.

Q. You have not prepared any sections, which would show the vein from the apex,—your western apex—have you?

—. ——.

346 Q. Now you haven't prepared any sections, have you, that show the vein in your western apex?

A. If you refer to the western apex, we have section III through the point furthest west; but if you mean parallel to the eastern end line——

Q. Yes.

A. No, sir; that would not extend through the ground in controversy.

Q. There is one other thing I want to ask you. What is this red you have shown up here on the Deering crosscut on the west of the Clancy fault on Exhibit 2?

A. That is some stopes, three floors of stopes, from a raise.

Q. What is the little working that runs north from the Deering crosscut in there?

A. It is evidently a crosscut from a drift from the stopes above; I should think it was a drift.

Q. That shows all the work that has been done there?

A. It does to my knowledge, all the work that I know of.

Q. It is a portion of the vein, is it, on the west side of the Clancy fault?

A. Not that I know anything about.

347 Q. Is there, though?

A. That is, that that is a portion of the vein?

Q. Yes.

A. I don't think so.

Q. There is some vein there, isn't there?

A. There is some ore there, also some ore a little further north, about 200 feet north.

Q. There is some ore there in the Senator Stewart claim, in the upper working too, over there, isn't there?

A. In the workings designated upper Stewart tunnel there is some ore.

Q. This apex that runs north and south here, you have traced that over to the south side line, or practically to the south side line of the Senator Stewart claim, haven't you?

A. I have traced it as it will be shown upon Plaintiff's Exhibit No. 1 to a point near the words "No. 7 Cut" on Plaintiff's Exhibit 1, and further in a southwesterly direction along the top of the stopes near the end of the working marked "Old Lower Stewart Tunnel;" that is, I had previously traced it.

Q. That is practically to the south side line of the Senator
348 Stewart claim?

A. It is within 60 or 70 feet of it, I believe.

Q. Would you object to just with a red pencil dotting that on your service map, Exhibit No. 3, just to show the course of that. If you would prefer to take it down, just so it is done by tomorrow morning will be all right?

A. Well, I will put it on now. (Marking) Something like that.

Q. As you have marked it on Exhibit 3 in the dotted lines?

A. Yes, sir.

Q. What is the course of that apex as you follow it across the Senator Stewart claim?

A. Approximately south 30 west or north 30 east.

Mr. GRAY: That is all.

Mr. DINES: That is all.

Witness excused.

Whereupon further hearing was adjourned until January 8th, at 10 a. m.

349 WEDNESDAY, *January 8th*, 1913—10 a. m.

M. W. BACON, after being duly sworn as a witness for Plaintiff, testified as follows:

Direct examination.

By Mr. GUNN:

Q. Mr. Bacon, what position, if any, do you occupy with the Stewart Mining Company?

A. I am the general manager.

Q. How long have you held the position of general manager?

A. About three years.

Q. What, if any, experience have you had in mining or in mining operations prior to becoming general manager of the Stewart Mining Company?

A. I have had experience in Montana running back for six years.

Q. In what district in Montana?
A. Butte.
Q. And with what mines or mining companies were you
350 connected in Butte, Montana?
A. I was general manager of La France Copper Company, and of the Davis-Daly Copper Company and also manager of the Basin Reduction Company.
Q. And those mining companies were conducting quartz mining operations?
A. Yes, they were.
Q. And what, if any, experience in mining have you had in Idaho, with the exception of that as general manager of the Stewart Mining Company?
A. Other than the handling of one small property, which is not a producer, I have occasion to look pretty much all over the country and the properties in the district.
Q. When did you first become acquainted with the property of the Stewart Mining Company?
A. In 1906.
Q. I call your attention to Plaintiff's Exhibit No. 1, and ask you if you recognize that as a map purporting to represent the workings of the Stewart Mining Company?
A. It does represent the workings of the Stewart Mining Company.
Q. Will you please step to the map and tell us to what
351 extent those workings had been at the time you first became acquainted with the property?
A. What is shown on the map as No. 4 tunnel had been run, and a number of these surface cuts—not this one, however.
Q. In making your references, make them so the record will show what they are?
A. Well, a number of surface cuts, A Tunnel, C Tunnel and one in the Senator Stewart Fraction which is unmarked, had been run.
Q. Locate that last one, please?
A. That is about 360 feet west of the east end line of the Senator Stewart Fraction and 120 feet south of the north side line of the Senator Stewart Fraction. The upper Stewart tunnel—nearly all of the workings shown as the upper Stewart tunnel has been completed, but not quite all. The old lower Stewart Tunnel had been completed easterly through what is known as the Deering Crosscut to approximately survey point 9545 in the Senator Stewart Fraction claim, and southerly and easterly in the Senator Stewart claim to approximately survey point 9511.
Q. That, then, as I understand, is in general a description of the workings that had been made at the time when you first
352 became acquainted with the property?
A. Yes, that is correct.
Q. So that you would say that all the workings shown upon this map southeasterly from a line drawn through the top of raise No. 2, had been made since you became acquainted with the property?
A. They have, yes.

Q. Now, what have your duties as general manager involved?

A. They have involved the handling of the business of the corporation and the entire development in the underground workings, and the a-quisition of surface grounds around our original holdings.

Q. And to what extend have you supervised or directed the mining operations of the company as general manager?

A. I have supervised and directed all of the operations underground for a period commencing in April, 1910. Prior to that period the work of running this crosscut—the crosscut to the ore body in the Senator Stewart claim and the Deering crosscut——

Q. That is rather indefinite.

353 A. It is on the old lower Stewart tunnel level. Prior to that, the work upon the old lower Stewart tunnel level had been directed and completed by others to a point approximately at survey point 9528.

Q. In the Senator Stewart claim?

A. In drift No. 4 in the Senator Stewart claim, and northwesterly therefrom to survey point 9522 in drift No. 4 in the Senator Stewart Fraction claim, and not quite to point 9962 in drift No. 4 in the Senator Stewart Fraction claim, but from the old Deering crosscut and on from the southwesterly end of that drift.

Q. Then are we to understand that all of the workings southeasterly from a line drawn at right angles to the south side line of the Senator Stewart Fraction claim through a point at the top of what is designated as raise No. 2 have been made under your direction, with the exceptions that you have referred to?

A. They have.

Q. Please point out, if you will, what work or development has been done for the purposes of or in the interest of this litigation, I will confine that to the Stewart Mining Company?

354 A. We have extended the apex crosscut in the Senator Stewart claim to the apex drift and drifted easterly and westerly thereupon. We also extended a hanging wall crosscut from this drift and from the top of the stopes above raise No. 4. We have extended raise No. 4 to the surface along the apex. We have extended crosscut No. 3 easterly on the old lower Stewart tunnel level, to crosscut the vein from drift No. 4 east to drift No. 5 east. We have extended the raise——

Mr. GRAY: I think Mr. Clancy has referred to these as the different levels. It might be more definite.

A. All right. I am now on the old Stewart tunnel level. We will say drift No. 4 east and No. 5 east on the old Stewart tunnel level. We extended raise No. 218 east from the 200 foot level to the old lower Stewart tunnel level. We extended raise No. 314 east from the 300 foot level to the 200 foot level parallel to the east end line of the Senator Stewart Fraction.

Q. I will ask you to confine your description to workings which have been made by the Stewart Mining Company in the interests of this litigation?

A. All right. We have extended the No. 405 east drift on the 400 foot level for a distance of approximately 70 feet.

355 Q. That 400 foot level is referred to as Fir tunnel, is it not?

A. Yes. We have extended No. 7 raise in the Senator Stewart claim from the top of the stopes above No. 4 drift on the old lower Stewart level to the apex. That is all the workings that have been done for the purposes of this litigation.

Q. Now, what work, if any, has been done by the Ontario Mining Company within the lines of the Stewart property since the commencement of this action?

A. The Ontario Mining Company did a little pumping in drift No. 1 east on the old lower Senator Stewart tunnel level. They extended raise 415 east above drift 405 east on the Fir tunnel level in the Switchback claim, and drifted easterly along the contact of the vein and the Osborn fault therefrom approximately 35 feet. They also had us do some cleaning out of the caved portion of the raise No. 300P, but there is nothing shown there.

Q. Calling your attention here to the raise above what is designated on the map as the Gray drift, called the Gray raise, I will ask you by whom that raise was made and when?

356 A. That raise was extended by the Ontario Mining Company into the Stewart Company's drift No. 305 west, and while we had announced our intention of sinking on this ore body into the stopes above the Gray drift, we were advised by Mr. Easton that he would extend that raise upward on the ore instead of our sinking on it, and that was satisfactory to us.

357 Q. Have you visited and examined the workings shown upon this map beneath the surface of the Ontario vein, and are you familiar with those workings?

A. I have visited and examined nearly all of them. I have not visited this raise—I do not know what level that is called, but on the first level below the Ontario Silver King tunnel level. There is some workings on the east end of that cross cut on that level that I have not seen.

Mr. FOLSOM: We call that the McDonald crosscut.

The WITNESS: That raise just mentioned is almost on the south side line of the Ontario claim.

Mr. GUNN:

Q. Now, calling your attention to all of the workings shown beneath the surface of the Senator Stewart Fraction, the Senator Stewart, the Lazy Jean and the Ontario southeast of a line drawn at right angles to the south side line of the Senator Stewart Fraction claim shown as the top of raise No. 2 west, I will ask you how many veins are exposed by those workings?

A. Only one.

Q. That is to say, the vein in the Ontario is the same vein that you find in the Senator Stewart Fraction and in the Senator Stewart?

358 A. It is, yes.

Q. What evidence is there in those workings from which you conclude that there is but the one vein?

A. There is but one vein and but one ore body, although that ore body has a fracture through this section and is torn apart.

Q. Designate the section?

A. The southeastern section of the Senator Stewart claim. The evidence that this is all one vein is that it can be traced continuously on commercial ore from within any point twenty-five or thirty—approximately twenty-five or thirty feet—below the apex in a great many varied ways through our workings on commercial ore into any other point in the vein and ore body, both in the Ontario claim above the Gray drift and Frank drift as well as in the Senator Stewart claim and the Senator Stewart fraction claim.

Q. I will ask you now to follow on this map the workings showing the vein continuous from the Frank ore body to the vein in the Senator Stewart Fraction claim; specify the workings as you pass along and what is disclosed in the workings?

A. Commencing at a point shown on exhibit 1, Frank
359 drift, in the Ontario claim, and going up Frank raise No. 1 from that drift to the Senator Stewart Mining Company's drift 305 west——

Q. Just a moment. Perhaps it would be briefer if you would, as you take up each raise and each level, state what is disclosed in that level with reference to the vein or with reference to ore?

A. The Frank drift was driven all on commercial ore which has been extracted and milled, and above this drift the Frank raise was run on commercial ore and is being mined. This is the extent of the Ontario workings and is the connecting point into the Stewart workings, the Ontario workings on and above the Frank drift. The top of this raise connects on very high grade ore with the Senator Stewart drift 305 west, of the 300, along which we extend northerly all on commercial ore until we reach raise 328 west which is all on high grade commercial ore to the 200. Reaching the 200 level of the Stewart Mining Company's workings we go east upon the vein and ore body. This ore body is all commercial to raise
223 west. Raise 223 west is extended to the old lower Stewart tunnel level all on commercial ore, and from which point—
360 from the top of which raise we would go northerly and easterly either along drift No. 4 east through the stopes above drift No. 4 to any point of the apex in the Senator Stewart Fraction claim. We can follow that to any point of that apex either through drift No. 4 or going down on the intermediate by going into the 100 or into the 200 and go on commercial ore to any point 25 or 30 feet below the entier apex from where it crosses the east end of the Senator Stewart Fraction claim to where it crosses the south side line of the Senator Stewart Fraction claim.

Q. Now, you have followed from the Frank ore body to the vein in the Senator Stewart Fraction claim, and I will ask you to follow in the same way, if you can, through the workings from what is referred to as the Gray ore body to the vein or ore body in the Senator Stewart Fraction claim?

A. Starting from the Gray drift which was driven upon commercial ore and there has been stopes extended above the same and

going up the Gray raise which we insisted upon being driven in order to connect with our west 305 drift—this is all upon commercial ore—this 305 west drift of the Stewart Company's which was extended into the Ontario Mining Company's surface in order
361 to make this positive connection is all on commercial ore, although small in some sets, until it reaches raise 314 west. Raise 314 west is driven on the vein and ore body from the Senator Stewart 300 level to the Senator Stewart 200 level. This raise is on ore and is being stoped. From the moment we reach the top of raise 304 on the 200 level of the Senator Stewart Company, which is at this point on the stope map——

Q. Just a moment; this point, that does not show in the record.

A. All right, I will explain it. We extend from the top of raise 314 west easterly along the 200 level all on commercial ore to a point approximately survey point 2041, from which point we can go into stopes which can be and are and have been connected with all the points of the apex in the Senator Stewart Fraction upon high grade and commercial ore bodies. I say to all the points of the apex, I mean by that to all of the tops of the stopes just under the apex.

Q. You spoke of a separation between what is referred to as the Frank ore body and the Gray ore body beneath the Ontario. I wish you would follow on this map, if you will, any course through the workings on the vein that will connect the Frank
362 ore body with the Gray ore body, the shortest course?

A. That can be done in several different ways, but the shortest course, starting from the Frank drift of the Ontario Company's workings through Frank raise No. 1 into the Stewart Company's 305 west drift and up raise 328 west to the 200 level of the Stewart Company, where we would go easterly along this drift until encountering No. 11 fault, at which point it would be necessary to go up into the stopes about 35 or 40 feet above the drift and where we pass through this fault (indicating) upon continuous ore and again descend under the fault into the 200 level we would continue to go easterly upon the 200 level upon the vein and ore body until we reach the top of raise 314 west where we would go down this raise to the 300 level.

Q. This raise—what raise is that?

A. I just mentioned it. Raise 314 west to the 300 level and enter drift 305 west on the 300 level and extend westerly thereupon to the top of the Gray raise and into the stopes of the Ontario Mining Company which are up into this drift.

Q. You mentioned the No. 11 fault. What effect, if any, does the No. 11 fault have upon the ore bodies in the Ontario, if
363 you know?

A. It has the effect of displacing the ore body in the Ontario about 100 feet.

Q. State whether or not that fault is disclosed in the workings higher in the Stewart Company's ground, and if so, where?

A. That fault is disclosed in our 300 level and 200 level at approximately survey point 2113 on the 300 level and at survey point 2073 on the 200 level.

Q. And what effect does it have upon the ore bodies on the 200 level in the way of displacement, if any?

A. The displacements on the 200 level is approximately 30 feet.

Q. And what are the conditions above that level and for what distance?

A. Forty feet above that level the ore body connects it and makes one continuous ore body and any action from the fault is lost entirely.

Q. I notice that the workings as shown upon this map terminate in the northeasterly portion of the Senator Stewart Fraction claim. Why were not those workings extended farther than shown?

364 A. They were extended to the end of the vein upon those elevations and encountered what we know as the Osborne fault.

Q. What course does the vein take from the termination along the Osborne fault in a southerly direction—upward or downward?

A. In a southerly direction downward. It extends up along the fault for forty or fifty feet before taking this course away from the fault downward into the earth.

Q. To what extent is the vein disclosed along the Osborne fault above the points where stoping has ceased?

A. The vein is disclosed along the Osborne fault through and above the 300, 200, 100 and east end of old Senator Stewart tunnel level. It is disclosed approximately forty feet above the stopes. Above the raise 4 east it is disclosed about ninety feet above the stopes.

365 Q. Can you trace on the map the termination of the vein along the Osborn fault as you know it to exist from the development in the ground?

A. The vein terminates along a plane parallel to the Osborn fault, and the best way that I can express it is to say that it simply feathers out.

Q. At what point is the top or termination of the vein, as distinguished from the commercial ore, exposed in those workings, the points, if you can state?

Q. Commencing at the end line of the Senator Stewart Fraction claim, the apex or top of the vein is exposed approximately 25 feet above the tops of the 300 stopes. It is arrived at by projecting the vein across the line from raise 314 east parallel to the line, about 75 feet therefrom. The apex of the vein is again seen by going up raise 314 east and extending westerly on the 200 foot level. The apex of the vein is again seen approximately 50 or 60 feet west of the face of 205 east crosscut on the 200 foot level. Going westerly till you get to raise 218 east, this raise is extended practically on the apex from the 200 foot level to the east end of drift No. 5 east on

366 the old lower Stewart tunnel level. This drift No. 5 east on the old lower Stewart tunnel level is slightly under the apex from survey point 2549; I should say that it is approximately on the apex to survey point 2549, or I will make that survey point 2571; I am quite sure that it extends that far along. From that time we have not got the apex developed by individual operations until we reach the east drift in the apex drift.

Q. Will you mark on the map with a letter the point to which you say the apex is exposed westerly from the east end line from the Senator Stewart Fraction, the survey point to which you have referred?

A. Why, I have not made those surveys myself, and I cannot state just exactly where the end of that apex is. It is approximately in here.

Q. You cannot locate it definitely not having made the surveys?

A. I have not made the calculations definitely enough.

Q. Pass through the apex drift and follow the apex as you know it to exist from observations made *in* the ground through the apex drifts and raises.

A. Now, continuing westerly along the line of the apex from the east end of the apex drift where it is encountered, it takes a
367 broad arc as shown by the apex drift. It was extended along the footwall until reaching point 2566 where it encounters the Osborn fault and makes a turn along the plane of the Osborn fault easterly, and eventually southeasterly away from the plane of the Osborn fault. From survey point 2566, going westerly, the apex is above the drift, and is again disclosed within ten feet of the surface near the top of raise No. 4 east which is above the apex drift, about 40 feet above the apex drift. Continuing westerly, the west end of the apex drift is run on the footwall, and the apex is within 30 or 40 feet above the west end of the apex drift until it encounters what we know as the Clancy fault in the west end of the apex drift, and we have no apex above this fault.

Q. Is the apex of this vein or ore body exposed at any other points in the Senator Stewart claim; if so, point it out?

A. It is again exposed, or it was again exposed near the top of No. 9 raise. That raise is not extended to the top of the stopes here on this level, but it was exposed there; the ore body made commercial ore up within about 20 feet of its apex, where the vein became so lean and poor that it was not worth extracting, but just at this
368 point we had quite an extensive cave of the ground, and I took the trouble one day to climb up through there and see what could be discerned, and I could see that this apex of the vein was disclosed there under the Clancy fault, the same as it is here, and the same as we have it at the top of raise No. 2 west, about 20 or 25 feet above the commercial ore body.

Q. Now state, if you will, in a general way, the angle of declination of the vein as it departs from the apex which you have described?

A. Well, you can take an angle of declination at any point within the arc, and you can get in consequence an angle of declination at right angles to any point of that apex within the arc.

Q. Well, I assume that to be true. But take the section of the apex which you have described, extending westerly from the easterly end line of the Senator Stewart Fraction, and state what the angle of declination of the vein is from that apex?

A. Starting at the point where the apex crosses the end of the Senator Stewart Fraction, the angle of declination is at right angles

to the strike of the apex, which is southeasterly and north-
369 westerly along the plane of the Osborn fault, approximately north 75 or 80 west, and the angle of declination from that is at right angles to that strike.

Q. And what would be the angle of the declination in degrees, approximately?

A. The angle of declination in degrees from the plane of the fault is all the way from 65 degrees as it immediately parallels the fault, to a gradual turning angle of declination to 20 degrees, found in the ore bodies under the Ontario claim.

Q. This will be shown by the cross sections, I take it?

A. These angles are all shown by the cross sections. It matters not where these cross sections are taken, whether they are taken at the east end line or at any point west of the east end line of the Senator Stewart Fraction along the apex in its course to and crossing the south side line of the Senator Stewart Fraction claim, you will get an angle of declination into the ore bodies under the Ontario claim.

Q. Then I take it that it will necessarily follow that the ore bodies in the Ontario are on a lower plane than the ore bodies in the Senator Stewart Fraction?

A. They are.

370 Q. I notice on this map the Silver King tunnel designated. By whom was that tunnel constructed?

A. That tunnel was constructed—we have no survey of that tunnel, but it was constructed in its long extended straight course to within approximately 100 feet of the east end line of the Senator Stewart claim, by the Stewart Mining Company.

Q. And from that point on it was constructed by whom?

A. From that point on I was first informed it was being constructed by the Bunker Hill & Sullivan Mining Company in order to connect with a working——

Mr. GRAY: Well, I object to that.

Q. Well, what you were informed would not be proper. If you know by whom it was constructed, you may state?

A. Well, I will say that it was constructed by the Ontario Mining Company. I have since learned that that is the fact.

Q. Now to what extent in depth had this vein in the Senator Stewart Fraction and the Senator Stewart claim been developed in the Senator Stewart claim at the time this Silver King was extended beyond the point to which the Stewart Mining Company constructed it?

371 A. The development of the ore bodies in the Senator Stewart and the Senator Stewart Fraction claims had consisted of opening up the ore body continuously from above drift No. 4 east on the old lower Stewart tunnel level to a point within 65 or 70 feet north of the south side line of the Senator Stewart claim, and the 100 foot level had been opened up and the ore encountered on the 200 foot level by the Stewart Mining Company.

Q. And state, if you can, through what opening the ore has been extracted from beneath the Ontario claim?

A. Through the Silver King tunnel, driven by the Stewart Mining Company.

Q. And when, if you can say, was the Silver King tunnel extended into or beneath the surface boundaries of the Ontario?

A. Sometime in August, 1911; I cannot say the positive date, because it was being run prior to my knowledge of the fact.

Q. I will ask you if that extension of the Silver King tunnel beneath the surface of the Senator Stewart claim was made with the consent or knowledge of the Stewart Company?

372 A. No, it was not.

Q. Now, what, if any, difference is there in the structural features of the vein as you find it along the east and west apex in the Senator Stewart Fraction claim and the structural features of the vein as you find it at other points beneath the property of the Stewart Company or beneath the Ontario claim?

A. They are the same; you cannot distinguish any difference whatsoever.

Q. What is the character of the ore or mineral in the vein in the Ontario claim as compared with the character of the ore or mineral in the vein in the Senator Stewart Fraction claim?

A. It is the same. It is all the same.

Q. In the evidence, the ore bodies in the Ontario have been referred to as the Frank, the May and the Gray. Are you familiar with the ore body in the Ontario that has been referred to as the May ore body?

A. I am, yes.

Q. What, if any, connection has that ore body with either of the ore bodies in the Ontario?

A. The May and Gray are the same ore body.

373 Q. Why do you say they are the same ore body?

A. Because there is a little fault right in here that has a displacement on that level, but my recollection is that two or three sets above that little level that those ore bodies connected and there was no displacement of the fault.

Q. You described certain work that had been done for the purpose or in the interest of this litigation. I will ask you for what purpose all other work shown upon this map was done?

A. For the purpose of extracting commercial ore.

Q. And in the ordinary course of mining operations?

A. Yes, sir.

Q. Mr. Bacon, I will direct your attention now to the workings shown upon this map in the westerly portion of the Senator Stewart Fraction claim and the Senator Stewart claim, and ask you what if any connection there is between any ore body or vein shown in those workings and the vein which you have referred to as the Stewart vein, disclosed in the workings in the easterly portion of these claims?

374 A. There is absolutely no connection whatsoever, and we have endeavored very strenuously to make some connection.

Q. What, if any, work has been done with a view to determining

whether or not the vein known as the Stewart vein extends northwesterly beyond the point where you say it is terminated against the Clancy fault?

A. There has been much money spent through this section of the country; in fact, the ground has been more thoroughly prospected than all of the rest of the property or any points in the property, but it has been so unsuccessful that we finally gave it up. Now, in doing that work there was Raise B. That should be marked.

Q. Perhaps you had better mark it.

A. I have marked it "Raise B."

Q. That is the raise near the line marked "III"?

A. That is near the intersection of the line "III" and the Deering crosscut on the old lower Stewart tunnel level. That raise was put up, and a lot of gophering done around there; at the point of the apex or approximately under the point of the apex just at the top of the stopes near the top of raise 7 a crosscut was extended westerly over to approximately the 85 foot level of the upper Stewart tunnel level, and then a number of openings were made,
375 small openings; short workings were run both by the present management and by Mr. Samuels before he disposed of the property, in order to make or find some continuation of this small ore body, but without success.

Q. And what is the distance approximately between the termination of the vein known as the Stewart vein and the ore body exposed further westerly in the property?

A. About 200 feet.

Q. Now, you have referred to the 400 level or the Fir tunnel. Is that a crosscut?

A. No, that is a drift.

Q. For a certain distance?

A. Yes, it is a drift; it is on the ore body for a certain distance; I should say it is a drift to the end of the Fir tunnel level, or to point 2094; there are crosscuts from there.

Q. Where, if at all, is the Osborne fault exposed in that level?

A. The Osborn fault is exposed just north of survey point 2513 upon that level.

Q. And how far beyond that point does the tunnel extend before it reaches the portal?

376 A. 2,200 feet, approximately.

Q. And what, if any evidence is there of any vein shown in this tunnel beyond the point you have designated as the Osborn fault?

A. Not any; we were never able to find anything in that section of the country.

Q. What, if any, evidence is there of this vein existing or extending at any point along what you have described as the apex here, northeasterly of the Osborn fault?

A. No evidence whatsoever.

Cross-examination.

By Mr. GRAY:

Q. You said something about Mr. Samuels owning that property; what was it that the interest you represent acquired it from Samuels?
A. In 1906, sometime.
Q. When did you first come over to see the property?
A. I was over here in 1906.
Q. At that time what workings were there on that property at the time you acquired it from Samuels?
A. My recollection is that these——
377 Q. Let us start out close to the surface and work downward?
A. This No. 4 tunnel was driven, this upper Senator Stewart was driven and the old lower Stewart tunnel was pra-tically driven.
Q. How far?
A. My recollection is that that was approximately in to about survey point 9545.
Q. On the Deering crosscut?
A. On the Deering crosscut, and approximately to survey point 9550 in the southeasterly crosscut.
Q. What other of these drifts, drift No. 1 or drift No. 2 from the Deering crosscut, had been run?
A. Drift No. 1 had been driven a short distance, I think to approximately point 2106, and drift No. 2 had been driven a short distance, to approximately point 9505C.
Q. Had the 35 foot level been opened in there?
A. Yes, the 35 foot level had been partially opened up.
Q. And ore stoped there?
A. There had been some ore taken out on this level.
Q. Now then, down in the Senator Stewart at the upper tunnel, had the 145 foot level been driven or opened up at that time?
378 A. The 145 foot level had been partially opened; I am inclined to think that all the work now shown on the 85 foot level was done. My recollection is that we did some work in this 145 foot level, and I know we did some work in this 85 foot level, but I think it was in this little drift off from that level.
Q. The drift to the south?
A. The drift to the south.
Q. And the work along the drift from the upper Stewart tunnel, the drift running northerly and southerly had been done, or a portion of it?
A. Yes. Mr. Samuels did nearly all of this work here, with a view of trying to find some continuation of this ore body and he gave it up as a bad job, and that is the reason he sold the property because he could not find any continuation of the ore bodies on the west.
Q. And that is the reason you bought it, I suppose?
A. No, we thought it could be found.
Q. And it was?
A. We thought the ore body could be found.

Q. Wel, this development justifies me in suggesting that it
379 has been. Now, considerable ore had been stoped along in that vein there?

A. Some ore was stoped there, not any of any consequence.

Q. No, not compared to the great quantity that has since been stoped, but there was ore sufficient to stope and ship?

A. Why, only when you were operating the mine.

Q. Didn't he ship it?

A. No.

Q. What did he do with it?

A. He picked out a little first class ore and shipped it from this piece of ground, and also there, but a very small quantity; it did not amount to anything in comparison with our extraction.

Q. Have you been able to find the Clancy fault in any of this working from the upper Stewart tunnel level?

A. No, we have never been able to locate that anywhere else except where it is shown here.

Q. I asked you now in the upper Stewart tunnel level, you have not found it?

A. No; I said we have never been able to locate it anywhere else but there where it is shown.

Q. Just answer my question. Now, the 145 foot level
380 was a drift on the vein, wasn't it?

A. Well, that is a question, whether it is a drift on a vein or not.

Q. What was the course of the vein there?

A. I don't recollect that working well enough to say

Q. What was the dip?

A. The country is so broken up through there that you cannot tell anything about it. It is very hard to get a uniform course or dip, and it is practically all closed up at this time, that level is.

Q. The miners drove it along on the vein?

A. They were hunting for the ore, yes.

Q. And expected to find it in a vein, I presume?

A. The country there is all cracked and broken.

Q. You said that was a part of the property on which you had spent as much money on it in development work as in the section which lies west of the Clancy fault. Why haven't you put that work on the map, if you have spent so much money there?

A. It was done for prospecting, not developing.

Q. Just tell the court where you, since your interests have
381 acquired this property, have spent a great deal of money west of the Clancy fault, where you say you have spent so much money in prospecting?

A. Well, this work east and southeast of the apex of our vein and ore body, as it comes up to the Clancy fault, has been in extracting one large mass and sheet of ore.

Mr. GRAY: I move to strike that out as not responsive.

A. (continued). Now, that work in the extracting of that ore and the developing of that ore, that is the extraction of ore and not

prospecting in any sense of the word. Now, there has been no prospecting done in that section of the country except a crosscut being driven here. The rest of it has simply been in the extraction of the ore for the purpose of milling. Through this section of the country, this crosscut——

Q. Just refer to that.

A. Through the center section of the Senator Stewart Fraction this crosscut west of the Deering crosscut has been run.

Q. West of the Clancy fault?

A. The number 2 drift has been run and the number 1 drift has been run, the No. 2 drift east has been run and the No. 1 drift east has been run; drift No. 2 west has been run, the
382 upper south crosscut has been run, the upper Stewart tunnel level and all of the workings there have been run; the 145 foot level below this upper Senator Stewart tunnel level, the No. C tunnel level has been run, the 85 foot level below the upper Senator Stewart tunnel level was run off the Samuels raise; the southeasterly crosscut was run and the No. 4 tunnel was run, all prospecting work, and all dead work.

Mr. GRAY: Now, if your honor please, I object to that answer as not being responsive to the question, and I will ask to have it read.

The COURT: Read the question.

Mr. DINES: We insist that he answered the question. Mr. Gray called his attention first to the language "You said there was more prospecting done in the west than in the east." That involves a comparison, and the witness has given it, and given that comparison as a reason for it. That answered the question.

The COURT: As I remember the question and the answer, the first part of the answer was not responsive to the question.

(Last two questions and answers read.)

383 The COURT: I think he has answered that question. The first part of his answer was not responsive to the question, but the last paragraph was.

Mr. GRAY: Well, I will have to cross examine him somewhat further to show that he has testified apparently through a misunderstanding.

384 Q. Your interests did not run the south Senator Stewart tunnel level to the point approximately 9551, did they?

A. No, I did not say that.

Q. What point did you say?

A. I said 9550.

Q. Let us make this short. Now, just tell the court where you, your interests, since you acquired this property have spent any money in prospecting or any work west of the Clancy fault?

A. We have spent money along through the tops of these stopes with all short footwall crosscuts.

Q. There are none of them shown on the map?

A. They are not on the map; they are not very extensive.

Mr. DINES: I would like to say that this map that you refer to is exhibit 1?

Mr. GRAY: Yes, sir.
The COURT: Yes, sir.
Mr. DINES: And not a stope map?

A. I cannot say how many of these have been run; they were done in the ordinary course of our mining operations with the attempt to develop, if possible, something in this section of the
385 country.

Q. Yes, sir. Now, "in this section," you are referring to the section——

A. I am referring to the section approximately through the center easterly and westerly of the Senator Stewart Fraction claim.

Q. Yes, sir. Now, how long was the longest crosscut westerly?

Mr. DINES: One moment. Let the witness answer the question. You asked him to point out the work. Now, he has pointed out part of it and I would like to have him point it all out; otherwise the answer would seem to be all.

The COURT: Yes, let the witness proceed.

Mr. GRAY: I thought it might be a little clearer the other way, but I am perfectly willing to proceed the way Mr. Dines wants me to. He seems to want to direct this.

Mr. DINES: No, I do not want to direct anything; I want the witness to be treated fairly, Mr. Gray, is all.

A. We ran this No. 7 crosscut through this section of the country. We kept men working up through this section of the country——

Q. Well, just say where?

386 A. (Continuing:) —gophering around. Over the upper Stewart tunnel level. I could not say how long we kept men in that employ attempting to find some continuation of the mineralization shown there, but I do know that we spent very much time and considerable money right here in this section.

Q. Where?

A. Between survey points 9569 and 9570 of the upper Stewart tunnel level, in attempting to disclose something there that would give us some information or some clue as to a possible continuation of our big ore body or another—or the continuation of this showing with depth.

Q. Is that all?

A. And raise B, we extended raise B and also extended the Deering crosscut; we extended drift 1 east and drift 2 west; we also did some work in this 2 east, but I cannot say just exactly what that was.

Q. Is that all?

A. I think that is all the prospecting we did in that ground.

Q. As a man of your experience in mining, do you pre-
387 tend to say to his honor here that the extension of the Deering crosscut from its face when you acquired that property to the point where it connects with the Stewart tunnel level would develop the Clancy fault or the vein, if it existed, between the upper workings——

A. Certainly it might.

Q. And——

A. It might. It is possible. We have not stoped to make a connection between this apex and this (indicating) because we have decided long ago that is impossible. We have hoped to find another ore sheet under this apex.

Q. Yes; I do not care about your hopes. What is the dip of that Clancy fault?

A. It is pretty flat up here, but you cannot tell, it may be dissipated at any point.

Q. What do you call flat?

A. My recollection is about thirty degrees, something like that.

Q. Dipping westerly thirty degrees or northwesterly?

A. Northwesterly, yes, sir.

Q. Do you say to the court that the Deering Crosscut would develop that?

388 A. Not from this point on, provided it maintained its dip. It may not maintain its dip; you know.

Q. The Deering crosscut was driven over to connect with the Stewart tunnel level, wasn't it?

A. It was driven to prospect——

Q. Answer that Yes or No and then make your explanation.

The COURT: And then make your explanation.

A. It was not.

Mr. GRAY: All right. Now you can explain, if you want to.

A. The Deering crosscut was driven in order to prospect the most easterly end of the Senator Stewart Fraction claim.

Q. This raise at B which you say you did some work in, you developed some ore up there and had some stopes out of which you took some ore, didn't you, shown on the stope map here?

A. We had a little ore there; it did not amount to anything.

Q. Yes, sir, and that shows the extent of your work there, doesn't it?

Mr. DINES: Please refer to that as an exhibit.

389 Mr. GRAY: It is the stope map. The court understands it.

Mr. DINES: But the record does not show it. We have a right to have the record show it.

Mr. GRAY: I am perfectly willing that you should call it that, and I will do it any way you want me to.

Mr. DINES: I do not wish to interrupt counsel or to be discourteous in the least. I am doing this in the interest of the record, and I hope counsel will not take offense. I do not mean to be offended or be offensive. It is customary in this case to refer to them as exhibits.

Mr. GRAY: Of course, you have tried many more cases than I have, and I must defer to your experience.

The COURT: Let it be referred to as exhibit 2.

Mr. GRAY: Exhibit 2, then, instead of the stope map?

The WITNESS: What is the question.

(Question read.)

A. Yes, sir, we had a little ore up there and we did a lot of work

up there attempting to find some continuation or correlate it with something, but it could not be done.

Q. This exhibit No. 2 shows the extent of that work?

A. Yes, sir, it shows the extent of that work.

390 Q. How high was that raise?

A. About fifty feet, possibly sixty.

Q. Now then, coming over here to this other work that you say you did above the drift.

The COURT: On exhibit 1.

Mr. GRAY: On exhibit 1, from the upper Stewart tunnel. That work was done in a westerly direction from the tunnel?

A. They were working here?

Q. No, upper Stewart tunnel. You said you did some gophering—I don't know—from that level you said?

A. We sank a wind in there from the shaft down about—between survey points 9569 and 9570, about forty feet, I think, and of course we were disappointed.

Q. Yes, sir. What else did you do there?

A. Just at this point?

Q. Any point; yes, sir.

A. I am not familiar with just exactly what our men were doing up there all the time. I know we had them on the roll.

Q. Yes, sir; what other work did you do?

A. We extended this from point——

Q. The level, southerly?

A. Westerly from survey point 9571, and the working ex-

391 tended westerly.

Q. Yes, sir; what else?

A. I think that is all that shows on this map, that all of the workings up in that section are not on this map.

Q. It is not a complete map then with reference to that section of the country?

A. No; there are some little workings up there that have been closed, and I do not know that they ever were mapped.

Q. Just little holes driven in eight or ten feet, I presume, here and there?

A. It was ground that could not be held open.

Q. What was the longest one of these crosscuts westerly that you have driven from the upper end of these stopes against the Clancy fault?

A. Those crosscuts are extended approximately sixty feet.

Q. Where is that one that is sixty feet long?

A. They do not any of them show on this map.

Q. You have already told us that two or three times. Now, tell us where it is?

A. We extended one of those crosscuts in the footwall

392 somewheres near the center section of the Senator Stewart Fraction claim.

Q. When did you do that?

A. That was some time while we were stoping that ground up there.

Q. In what year, 1911 or 1912?
A. I think it was the early part of this year is my recollection.
Q. Of 1912?
A. Yes, sir.
Q. You mean last year?
A. Yes, sir.
Q. Just approximately where was it on the stope map, exhibit No. 2?
A. It was somewheres in here; I do not remember just exactly where that crosscut was driven.
Q. Is that open now?
A. Those crosscuts were driven with two ends in view, one was to fill our stopes with waste, and the other was to do what prospecting could be done.
Q. Is it still open?
A. No.
393 Q. Where were the other crosscuts that you drove over in there?
A. I do not attempt to locate those definitely because they were not successful and were not located upon the map. As I say, the object was to fill our stopes as well as to prospect that section of the country.
Q. Now, there is one question I want to ask you about this map here. Mr. Gunn asked you to start in on the Gray ore body and follow it over to this alleged apex of yours on the vein. Why was it necessary for you to travel up any of the raises in order to get over to the alleged apex of the vein?
A. It is necessary for us to travel upward from the Gray ore body to get to our apex at any point of our apex.
Q. Let us take a look at this now. Starting in in the stopes of the Gray ore body you can follow along on the 300 foot level?

The COURT: You are referring to exhibit 2 now?
Mr. GRAY: Exhibit 2, or exhibit 1 for that matter, if your honor pleases.

Q. You can follow along on the 300 foot level until you come to this alleged apex, can't you?
394 A. We can——
Q. Answer that question Yes or No and then explain if you want to?
A. Yes, we can follow on continuous ore from the Gray ore body along the 300 foot level up to our apex.
Q. That is right on the level, can't you?
A. Not necessarily on the level; you cannot go on the level up to our apex, no; it is necessary to go up a raise——
Q. To go up a raise where?
A. In order to get to the apex.
Q. Where?
A. It is necessary to go up two raises.
Q. Where?

A. The Gray raise from the Gray drift in to the 300, and the raise 314 east from the 300 to the apex.

Q. Come over to the stope map and see whether it is necessary to go up the raise from the Gray. You start right in on the stopes, don't you?

A. You can start here at the top of the stopes.

Q. Yes, sir. The cross sections show all that, though?

A. Certainly they do.

395 Q. Now, I understood you to say, Mr. Bacon, that this figure seven that you have got on exhibit 3 is a great arc?

A. Yes, sir; it is in the form of an arc. This point up here is projected. The actual development shows in the apex drift in exhibit No. 1.

Q. As a matter of fact when you acquired that property there were none of the openings upon this alleged apex which you are now presenting to the court as the apex of the vein, it had not been developed?

A. When we acquired the property——

Q. Could you answer, Mr. Bacon, one question without arguing it? Just answer it and then explain if you want to.

Mr. GUNN: I submit that the comment of counsel upon the answer of the witness is not proper or warranted.

The COURT: Let him answer the question and then explain.

The WITNESS: Read me the question.

(Question read.)

A. No; this vein had not been developed, nor had any of the workings upon this vein been developed.

Mr. GRAY: That is all.

396 Redirect examination.

By Mr. GUNN:

Q. I will ask you whether from the prospecting that has been done that you have referred to, you consider that this country has been sufficiently prospected to determine whether or not there is any connection or any relation between the ore body disclosed in the most westerly workings and the ore body known as the Stewart ore body?

A. I do.

Mr. GUNN: That is all.

Witness excused.

Mr. GUNN: There is one other matter that perhaps would be well to call to the attention of the court now. Of course, this suit involves title, and we are also asking for an accounting. I do not know what the practice of this jurisdiction is.

The COURT: I think I will probably refer it for an accounting.

Mr. GUNN: Then it would not be necessary at this time to go into the question of an accounting?

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397 The COURT: I should prefer that you should not.
Mr. FOLSOM: We prefer not.
Mr. GUNN: We will conform to the wish of the court.

Thereupon a recess was taken until 2:00 o'clock P. M. of this day, Wednesday, January 8th, 1913.

398 WEDNESDAY, *January 8th*, 1913—2 p. m.

Further hearing was adjourned until January 9th, at 10 o'clock A. M.

THURSDAY, *January 9th*, 1913—10 a. m.

Mr. DINES: May it please the court, on account of the illness of one of our witnesses, who is still sick and under the care of a physician, we will have to change the order of our proceedings somewhat, and I will call Mr. Winchell to the stand.

HORACE V. WINCHELL, after being duly sworn as a witness for plaintiff, testified as follows:

Direct examination.

By Mr. DINES:

Q. Mr. Winchell, state your full name, residence and occupation?
A. Horace V. Winchell, Minneapolis, Minnesota, occupation, mining geologist.
Q. How long have you followed the profession of mining geologist?
399 A. I have been engaged in practical geological work for about twenty-five years.
Q. Did you have any technical training preparatory to entering that profession; if so, when and where?
A. I studied geology with my father, Professor N. H. Winchell, of the University of Minnesota. I graduated at the University of Michigan in 1889, where I took particular special studies in geology with my uncle, Professor Alexander Winchell, of that institution. Both before and immediately subsequent to graduation I spent some time out of college in the study of geology in the field and in the laboratory, chiefly in connection with the work of the Minnesota Geological Survey. Since graduation I have been constantly engaged in the practice of my profession.
Q. What experience have you had since your graduation, either in the lines of general study or of editing literature along the lines of your profession, preparing papers, and what scientific societies are you a member of?
A. Immediately after graduation I resumed work upon the Minnesota Geological Survey, making studies of the iron ore ranges, the Mesabe and Vermilion Ranges in Minnesota for about two
400 years. From 1892 to 1894 I was geologist in charge of the exploring work of the Minnesota Iron Company, the owner of large iron mines in Minnesota. In 1895 I conducted additional geological survey work, particularly in the Rainy Lake gold region. Between 1894 and 1898 I was engaged in general consulting mining

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engineering and geological work, during the course of which time my investigations carried me over a considerable portion of the West, as well as the Lake Superior region. In 1898 I moved my residence to Butte, Montana, where I became geologist in charge of the geological department of the Anaconda Copper Mining Company. Shortly afterwards I had similar employment in connection with the Boston & Montana Consolidated Copper & Silver Mining Company, the Butte & Boston Consolidated Mining Company, Parrot Silver & Copper Mining Company, the Washoe Copper Company, and possibly other companies operating mines in Butte. For eight years I occupied that position, and during that time made examinations in nearly all portions of the western country, ranging from Alaska to Mexico, covering British Columbia, Ontario, Alberta and other parts of the world. In 1906 I became geologist in charge of
401 the geological department of the Great Northern Railway Company, occupying that position for two years, directing explorations of mining property, acquiring, buying, exploring coal, iron ore and other property in the Lake Superior region and throughout the territory traversed by or tributory to the Great Northern and the Northern Pacific Railroad. Since 1906 my residence has been in Minneapolis, and I have been engaged in consulting work, making examinations constantly in various parts of North America and of Europe.

Q. Without going into detail, during those years have you contributed to the literature along the lines of your profession and studies?

A. I have prepared some rather unimportant reports upon mines and ore deposits.

Q. Have you made any special study of the nature and origin of ore deposits?

A. I have.

Q. During what length of time in connection with the duties which you have detailed in following out the pursuit of your profession have you devoted study to this particular branch of the nature and origin of ore deposits?

A. I made a special investigation into the question of the origin
402 of iron ores back as far as 1888 and 1889 and 1890. I was joint author with my father of a report upon the iron ores of Minnesota, in which that question was considered at length. I have endeavored to acquaint myself with the literature on the subject since it began to be a subject of inquiry. I have made some investigations into the character and origin of copper ores and of other ores, so that I feel somewhat familiar with the investigations that others have made and with the theories generally adopted relative to the origin and geological relations of ore deposits.

Q. Have you had occasion during these years to make any observation and study of the question of the origin and nature of ore deposits, the structural features of veins, especially as related to the grant under the act of Congress of the rights of location on the public domain of lode locations?

A. I have done so.

Q. Have you had any experience during this time in the deposits and structural features of the veins in the Cœur d'Alenes?

A. Yes.

Q. Over what period of years has that study and observation continued?

403 A. Particularly during the last six years, or perhaps nearly seven years. I had been in the Cœur d'Alene District at earlier periods, but my familiarity with the Cœur d'Alenes has been quite thorough for the past six and a half or seven years. During that time I have made examinations in connection with the development and acquisition of property, commercial reports, and in connection with questions of litigation *with* have arisen over the ownership of ore deposits in this camp.

Q. During those years have you at any time devoted any particular attention to a study of the ore deposits and structural features of the vein existing in the Senator Stewart Fraction, the Senator Stewart and the Ontario Lode Mining Claim, and their contiguous mining claims immediately surrounding the territory involved in this litigation?

A. Yes, sir.

Q. When did you first make any observation or study of that particular deposit?

A. I visited the Senator Stewart mine about the middle of April, 1906, making a brief examination of the development of the ore in the property at that time. Subsequently, for the purpose of

404 testifying in the case of Jonathan Bourne vs. the Federal Mining & Smelting Company, and another case in which Jonathan Bourne was plaintiff and the Sierra Nevada Consolidated Mining Company was defendant, I examined the workings and development and geological features of the Ontario claim. Within the past year I have made additional examinations of all the workings accessible and open to examination in the Senator Stewart Fraction, Senator Stewart, Lazy Jean, Switchback and Ontario claims.

Q. Now, in order that we may understand, and for that purpose only, I will ask you this question: you spoke of litigation between Jonathan Bourne and the Sierra Nevada Consolidated Mining Company. That was tried before his honor Judge Woods, who now sits on the bench, was it not?

The COURT: No.

A. The case against the Federal Mining & Smelting Company was in the State court, and the testimony in both cases was taken jointly.

Mr. FOLSOM: It is just reversed; the Sierra Nevada case was here.

Mr. DINES: That was my understanding.

A. Oh, very well.

Q. In order that Judge Woods may know whether any

405 matters he may have decided in that case are involved, I will ask you this question, and for that purpose alone: That investigation in which evidence was introduced before his honor involved a so called Ontario vein which was found in that to cross on its strike northeasterly of the northwest corner of the Ontario, and

then following to the south across the east side line of that claim; is that correct?

A. That is correct.

Q. Now, was that Ontario vein any vein that is involved in this controversy?

A. It was not. None of the workings developed in the Ontario at that time are shown upon the plan map, Exhibit 1, for the plaintiff in this case.

Q. Was the Ontario vein that was investigated in that case what is known and has been referred to, I think, in this case so far as the Ontario fault?

A. It was. I will say further that topographically—so that that map may be understood—topographically upon Plaintiff's Exhibit No. 1 the workings representing the developments upon the Silver King tunnel level and the 300 and the Fir tunnel levels are deeper in the ground than any development made and considered
406 at the time of the former controversy.

Q. Mr. Winchell, please define a vein?

A. A vein is a more or less tabular shaped mass of mineral or mineral bearing rock within boundaries, in place in solid formation, and containing such indications of value as to justify the miner in following it in the pursuit of ore.

Q. What classes of veins are there in the Cœur d'Alene district as far as your investigation has extended?

A. I should say that there are three classes of veins. The first, which occurs in this district but seldom, is called a contact vein, the mineralization of which has been derived from eruptive rocks and deposited along the contact of the eruptive rocks with other rock, usually sedimentary in this district. The second class of veins is that of fissure veins. Fissure veins are those which occupy an opening along a crack in the earth's crust, veins in which the mineral has been introduced to a certain extent into an open fissure, and in which the walls are more or less parallel, the strikes usually rather uniform, the dips rather steep, and the structure more or less banded with the arrangement of the minerals in layers or bands par-
407 allel to the walls. Such veins are found in this camp. In the immediate section under discussion here we find a class of veins which is quite common, known as replacement veins. Replacement veins are marked by several characteristics, and in general differ as to these characteristics from veins of the other two classes, particularly from the fissure veins. The first characteristic of replacement veins is that of irregular boundaries or outlines; the mineralization is not limited by defined and approximately parallel walls but the ore has been deposited in the rocks, replacing particles of the rock, rather than filling an open space, and following in this replacement the more readily dissolved and replaced portions of the rocks. The boundaries, therefore, are frequently not parallel to each other. We have also the characteristic, very often, of flatter dips, the dip depending upon the dip of the rock, the rock layers in which the mineralizing solutions find lodgment for their burden of mineral. This flatter dip may even produce a vein which is approximately horizontal or flat. In many districts in the United

States layers of limestone or of other rocks, and in the Cœur d'Alene district of quartzite, have been mineralized in almost hori-
408 zontal positions. Another characteristic——

Q. I will ask you there to take up the question of walls, and compare the walls, if you do not object to my interruption?

A. Yes. The walls of a replacement vein are seldom well defined. That may arise from two causes; in the first place the walls of a vein frequently mark a plane of movement, and if the rocks are moved upon each other, it is necessary that the walls should be somewhat regular in direction; but if the mineralization has been deposited through a soluble or crushed rock, without following planes of fracture and movement, then the walls are not developed, and the boundaries may be those of the commercial ore, rather than bounding planes like the walls of a fissure vein. These boundaries also may have sinuosities and windings; they may turn from this flatter dip, and the frequent irregularities in strikes and dips produce upon every plane of section very uneven and irregular contour, or line representing the boundaries of the vein. Frequently tongues of ore extend out into the hanging or the foot walls, or from the footwall portion of the vein into the country rock, making long loops
409 and nests and ore chutes, sometimes separated or removed to a distance of perhaps several hundred feet from the main strike of the vein. This is noticeably true in the camp of Bisbee where the copper ores have been deposited in a limestone formation, and the outline of the ore bodies is as irregular as can be imagined.

410 Q. Now, will you discuss, if you please, before we take up this particular vein, also any difference in structure between the fissure and the replacement veins that you have classified arising from the difference of their origin?

A. I have already briefly referred to that in saying that the structure of fissure veins in general parallel so far as they have an internal structure to the walls, whereas the arrangement of the ore minerals in a replacement vein is extremely irregular and capricious, following the position of the more soluble grains and fragments of the rock before the mineralization was deposited. There is, therefore, seldom what is called a banding or parallel arrangement in a replacement vein. In this Cœur d'Alene district, if you will permit me to say a word about the general geology, the country rock consists of a series of sediments all at some time deposited in water and accumulated to an enormous thickness. These sediments consist of a number of series from below upward. They are extremely old geologically and have not been found to contain any fossils or remains of animal or vegetable life. The sediments at the lower portion are slates, a slate formation of great thickness deposited
411 apparently in shallow waters, to which the name Prichard slates have been given. That is the basal formation and the bottom of it is not disclosed in this camp. What originally lay underneath it, we do not know. Above the Prichard slates come various series of quartzite, the first being called the Burke quartzite, having a thickness of two thousand feet or more, and above that another quartzite called the Revett, and so on. In these sediments

there have penetrated certain intrusive eruptive rocks, the most important being that of a granite or a menzonite. This granite resembles in many respects the granite found in larger areas farther east and southeast and may belong to that general large mass of granite underlying a large portion of Idaho, and it has been brought to the surface by erosion over a considerable portion of central Idaho and some portions of Montana. There have been other intrusive rocks which have come from below and filled cracks in the quartzites and slates making dykes. These dykes are not abundant or apparently of any considerable importance in considering the general origin of the ore nor in explaining structural features. In the particular district in question we have the Prichard slates and the Burke quartzite developed in these workings. The most of
412 the ore in the Cœur d'Alenes, the silver-lead ore, has been derived from veins which have as their country rock the Burke and the Revett quartzites.

Q. Now, Mr. Winchell, I will ask you, if you please, taking Exhibits 1 to 9 inclusive and the other exhibits as you will call for them and applying the principles that you have laid down, the facts that you have observed, the classification that you have made, please discuss the vein that is in the Senator Stewart Fraction and its boundaries, its general surroundings as with these scientific facts applied to them and use these exhibits as you may wish and in the order you wish, and when you call for the plan maps I will furnish you those in order. I will ask you to state it in your own way?

A. Within the boundaries of the Senator Stewart Fraction, Senator Stewart, Lazy Jean and Ontario claims we find one large vein, one replacement vein I should say, and two or three smaller mineralized veins. The country has been very much shattered by earth movements. The vein has a comparatively flat dip. It has a dip, however, like that of replacement veins in general, and particularly where the country rocks have been much bent and moved
413 presents great irregularities in dip and strike, the vein here varying in dip from fifty or sixty degrees to the horizontal and even for short distances having reverse dips, coming down from its upper portion the vein will have a steep dip, flatten off, steepen, again flatten, go up over a little more and down. This is well illustrated in the stopes between some of these levels where the undulations of the vein are seen and where sometimes the little elevation produced by thrust forces amount to sufficient to rupture the vein and make a little fault or fracture right through the axis of the fold or wave in the vein. Because of this shattered condition of the rocks, it may probably be explained right here there is through the Cœur d'Alene district exposed at many points and developed and accentuated in the topography a fault of unusual magnitude and displacement known as the Osborne fault. There are many faults but the Osborne fault is a comparatively recent fault geologically although a very old fault in point of years, because it has been shown that the movement upon this fault downward the country upon the south side or hanging wall side of the fault having moved relative to the country on the north side, has
414 amounted to more than a mile in vertical displacement. If that movement had been extremely recent we should have s

fault scarp or break there upon which the rocks on one side were a mile lower than the rocks upon the other side, and would have a very precipitous mountain range front running easterly and westerly approximately along the course of the south fork of the Cœur d'Alene river, whereas as a matter of fact, we find the rocks upon the south side of this fault sometimes and frequently higher than the rocks upon the north, showing that the topography has been developed very largely regardless of this fault and certainly since its movement. Now, in moving this enormous block of country fifteen or twenty miles in length downward upon the hanging wall of the Osborne fault every vein contained within that moving block of quartzite was subject to more or less bending and breaking because this block did not all move in one unbroken solid mass. It was crushed and more or less shattered and the veins themselves were bent around and sometimes broken to a distance of hundreds of feet away from this fault. Those conditions are well illustrated in the developments and disclosures in the Senator Stewart
415 Fraction and the vicinity. The vein has been moved and bent. The stopes illustrated upon Plaintiff's Exhibit 2 show how the vein has been curved around. That curving is not within the fault, it is in the country rock in place at a distance of from nothing to five hundred feet from the fault and it shows how the rocks were bent before they were actually ruptured and it shows, further, upon more intimate examination, internal breaks of minor importance.

Keeping that condition of the ground in mind, I will describe from the surface downward various points at which the vein is disclosed and its characteristics. The uppermost elevation at which the Stewart vein is seen in this territory is just beneath the wash in the raise from the apex drift which is called raise 4 east. The vein is here oxidized and iron stained and does not contain stoping ore. That reminds me that I should have said further in referring to the replacement veins that from the nature of the origin of such veins it will be understood that the bodies of merchantable ore are distributed somewhat irregularly throughout the veins, throughout the country which has been mineralized, and that the boundary of the vein is not the boundary of the merchantable ore bodies,
416 but it is that portion of the rock within which the miner is justified in looking for ore. The boundaries mark that portion. We have, therefore, in the apex drift just the upper portion of the sulphide or unoxidized ore. Ore can be seen along the drift itself, both galena and carbonate ores. In the floor of the drift just west of the cross-cut there is some ore, good ore, and in the southern end of the crosscut which has been run south from the apex drift and encountered the old stopes, there is carbonate still today. This vein here is shown to have a thickness of perhaps thirty feet. The hanging wall or hanging wall boundary of the vein has not been developed. How much farther it extends we do not know, but the drift at the eastern end of the apex drift is still extending upon oxidized vein material. From this apex drift connection is made through a raise into the stopes which have been

made upon the vein below. These stopes lie above the old lower tunnel level to which I should like to refer in detail.

Q. In order that this may be used, I will ask the stenographer to mark it for identification as Plaintiff's Exhibit 10. It is
417 the map on which is marked in the lower right hand corner "old lower Stewart Tunnel," and I will ask you Mr. Winchell, if you have checked this map in reference to the other exhibits and know that the objects that it purports to show are correctly indicated on the map?

A. The workings upon this map correspond with the workings upon the plan map already introduced in evidence and proven, and the geology corresponds with my own notes and observations underground.

Mr. DINES: I think your practice is, your honor, after identification it must be offered before it can be referred to. I therefore offer Exhibit 10 in evidence and ask the stenographer to mark it.

The COURT: It will be admitted if there is no objection.

The said map was thereupon marked Plaintiff's Exhibit No. 10, admitted.

A. Upon Plaintiff's Exhibit 10 there are two bands of red. The narrower and shortest band represents a vein which has been worked upon the old lower tunnel level. I saw this vein and the ore in it in April, 1906. The nearest place in the ground upon this level to which the Stewart vein approaches the vein first referred
418 to, which is called No. 2, is about two hundred feet, a little less than two hundred feet. The Stewart vein is shown upon Plaintiff's Exhibit 10 in its extension from the eastern end of the level in a westerly and southwesterly direction for a distance of nearly seven hundred feet. We have here an illustration of the irregularity in outline and in size and the lack of parallelism between the boundaries at various points, which is characteristic of replacement veins. The widest portion of the vein upon this level represents a place where the vein is very flat and does not represent the actual thickness of the vein. The thickness of the vein at this wide portion which appears upon the map and in the ground to be about 180 feet in width is perhaps forty feet or thereabouts. The vein has within it different layers and lenses of merchantable ore. These have been stoped. They do not always lie parallel with each other, nor with the outline of the vein; they have been stoped upon this level in two portions at least. There is a wide stope which is represented in blue upon Plaintiff's Exhibit 1 which represents the widths of the sill floor stope at that point. The vein in drift 5 east also contained a layer of merchantable ore, and there
419 was stoped and not quite so flat. Here also was one of those little rolls or undulations in the vein. The dip of the vein upon this level so far as the ore is concerned is actually reversed; in other words, coming up raise No. 3 east we come upward to the south and then down again to the level of the floor in drift 5 east. This is illustrated upon some of the sections. The vein continues to the southwesterly as far as the level extends and has been stoped, as shown upon Plaintiff's Exhibit 2 above this level almost con-

tinuously. The eastern termination of the vein upon this level is at the Osborne fault, and it can be seen that the vein turns materially before it is cut off by this fault, before it lies upon the hanging wall of the fault, there is a wide bend in the mineralization, the footwall boundary and the actual end of the vein, the top of the vein looking at it up and downward upon its dip is shown in the eastern portion of the level near survey points 2371 and 2549. The Osborne fault is clearly disclosed here with a strike of north 65 degrees west and dip of about 70 degrees. One of those little breaks which I said sometimes mark the summit of the fold is indicated by the slight jog upon the hanging wall boundary of this
420 place. A little fault probably passes through this point. Possibly we have two faults, neither of great displacement, neither sufficient to offset the vein entirely, but converging here, because in the drift near station C53 we have a little fault whose course would take it across the vein in a north and south direction, and near station 2503 we have another little fault whose course would take it down in the same direction. In other words, there may be two little breaks at this point, and the hanging wall outline of the vein is represented as we believe it to be somewhat jagged there.

From the old tunnel level we may descend upon the vein along raise 218 east, passing the end of the 100 level, and reaching the 200 level at the bottom of this raise.

This raise is driven along the upper edge of the ore where it lies upon the Osborne fault. It does not follow the precise upper edge in every case because the outline of the ore is slightly irregular, but the ore can be seen following down this raise and passing through old stopes upon the southwest side of the raise and the Osborne fault itself can be seen upon the northeast side of the raise. About
421 a third of the way down the raise there is a little slice of ore upon the northeast side of the raise also. There is, however, continuous development of the structural conditions and we have there the upper edge of the ore in this ground for the 150 or 200 feet which represents the distance between the 200 level and the old tunnel level.

I should like to refer to the 100 level, if you please.

There is another raise which connects upon the vein the 200 level with the old tunnel level. This raise is indicated upon Plaintiff's Exhibit 2 in this position and it is called raise 223 west as indicated upon Plaintiff's Exhibit 1. That raise is open and shows continuous vein, mostly ore which is being worked or has been.

Q. I show you plan map marked 100 level, which I will ask to be identified as Plaintiff's Exhibit 11, and ask you if you have checked that with reference to the same data which you used on the other exhibits and are able to say whether or not it correctly represents the lines and objects it purports to represent on its face?
422 A. Yes, I have checked the workings, and I have placed the geology upon this exhibit No. 11 to represent my observations and my ideas of the position of the vein upon this level.

Mr. DINES: We offer Plaintiff's Exhibit No. 11 in evidence.

Plaintiff's Exhibit No. 11 admitted in evidence without objection.

WITNESS: Plaintiff's Exhibit No. 11, representing the 100 foot level shows a limited amount of development, and really that is only an intermediate level. Raise 218 East which has already been referred to as connecting the old tunnel level with the 200 foot level, is shown at the eastern end of the vein where the Osborn fault is also shown in its proper place. The relation of the vein to the fault is seen upon this level, and we have illustrated here the bending of the veins in the hanging wall quartzite at a distance of several hundred feet from the fault, before the fault is actually reached; in other words, if you should continue the vein in the strike which it has in its southwestern portion without bending it to the northeast from the fault, you would find it to be some
423 200 feet further to the northwest than it actually is. The width of the vein on this level is not so irregular as upon old tunnel level.

Q. I show you the plan map of the 200 foot level, to be marked as Plaintiff's Exhibit No. 12, and ask you if you have checked the lines and the representations and the geology on this plan in the same way as you have on the former exhibit, and are able to say whether or not it is correct?

A. Yes, sir, I have.

Mr. DINES: We offer in evidence Plaintiff's Exhibit No. 12.

Plaintiff's Exhibit No. 12 admitted in evidence without objection.

WITNESS: Upon Plaintiff's Exhibit No. 12 we have a very small development and exposure of No. 2 vein. It is found in drift No. 202 east, and has no commercial importance. The Stewart vein is seen upon this level for a distance of eight or nine hundred feet, striking northeasterly, exhibiting no marked irregularities in width or in course, but showing again the curving or bending due to the flexing of the country rock southwest from the Osborn fault.
424 The Osborn fault is developed and shown near the bottom of raise No. 218, where the vein rests upon its hanging wall. We have another fault of small displacement which is what is sometimes termed a scissors' fault, which is a fault which in certain planes has a movement which appears to have increased as you go down. Upon this level the vein is barely displaced by this fault, but upon the level below—it will be seen that there is apparently a considerable displacement of the vein by the No 11 fault. The ore streak, that portion of the vein which was mined for ore does exhibit an actual separation upon this level, but about thirty or thirty-five feet above the level the stopes pass continuously, without interruption, through the No. 11 fault, furnishing conclusive proof of the character of the displacement, and the fact that the vein is not severed by it on its upward course, but rather as depth is increased. The irregularity of the mineralization is illustrated upon this level; the outline of certain stopes has been placed upon the map in orange colored lines, and it can be seen that sometimes the ore bodies were extremely irregular and wide and then unmineralized where hard quartzite succeeds and occupies the vein material for a
425 considerable distance. That is a very common phenomenon in the Cœur d'Alene district and in this particular section.

Q. I show you a plan of the 300 foot level of the Stewart mine, and will have it marked as Plaintiff's Exhibit No. 13. Have you made a check upon this exhibit in reference to the placing of the geology upon the plans and the lines, so as to enable you to say whether or not it correctly represents the lines and objects it purports to represent on its face?

A. I have.

Mr. DINES: We offer Plaintiff's Exhibit No. 13 in evidence.

Plaintiff's Exhibit No. 13 admitted in evidence without objection.

WITNESS: Plaintiff's Exhibit No. 13 represents the 300 foot level of the Stewart mine, and shows the vein at a point where it is flat, and therefore wide, upon this level, and at a point where it is locally steepening its dip, and therefore narrow. It also illustrates the termination or eastern and upper edge of the vein against the Osborn fault as shown in the plans, and we have here the particular
426 point of the crossing of the east end line of the Senator Stewart Fraction claim by the uppermost edge of the vein. There is actually developed in the ground the point of the crossing of the eastern end line by the upper edge of the vein. Stopes extending to the southwesterly prove the vein to have an important development and to contain extremely valuable ore. We have also from this level a raise which is called raise 314 east, which goes up for a short distance upon the vein to its top and then follows the Osborn fault to the 200 foot level above, and then west along that level until the edge or top of the vein is again encountered there. We see in the southwestern part of these workings No. 11 fault near survey point 2118. The displacement upon this level appears to be and is about 180 feet horizontally; the precise point where No. 11 fault would appear to terminate the eastern leg of the vein is not developed upon the sill floor, but in the stopes which are being made from the Silver King tunnel level above the sill floor and slightly to the south of the face of this drift the fault is now developed and the ore terminates against it.

Q. I show you a plan map of the 400 foot level, to be identified as Plaintiff's Exhibit No. 14, and ask you the same
427 question as to that as to the former exhibit, whether or not you have checked it sufficiently to enable you to say whether or not it is correct?

A. I have.

Q. And is it correct?

A. Yes, sir.

Mr. DINES: We offer in evidence Plaintiff's Exhibit No. 14.

Plaintiff's Exhibit No. 14 admitted in evidence without objection.

WITNESS: Plaintiff's Exhibit number 14 represents the workings upon the sill floor upon the 400 or Fir tunnel level of the Stewart mine, together with the first floor stopes above this level, and the position of the vein upon the level. It also exhibits the Silver King tunnel, the Gray drift, the May drift and the Frank drift upon that level, and the vein disclosures in those workings. We have further the termination of the vein against the Osborn fault, and we have a

very marked development of flat ore, upon which large stopes have been and are being made, making a very pronounced tongue, extending southerly. The apparent width of the vein upon
428 this level at its widest part is about 220 feet, and the length of this tongue, if taken upon a slightly inclined plane, instead of approximately horizontally, would be still greater, because the ore goes into the floor of the level near the southern end of the workings marked "415 West." The vein also has a steeper portion which connects with the workings in the Gray drift, although there is no direct and immediate connection upon this level, the connection being made by means of up and downward workings in to the 300 foot level of the Stewart, and then drifts further to the north. The number 11 fault is shown with a displacement upon this level somewhat less than upon the level above, namely about 100 feet between the Frank and the May, and then another little fault separating the May and the Gray. The vein upon this level is richly mineralized; the country rock over wide areas contains disseminated mineralization, and the quartzite is very much shattered and crushed in all directions. The actual position of the upper edge of the vein upon this level where it rests upon the Osborn fault is somewhat east of the Senator Stewart Fraction end line. The country rock north east of this Osborn fault, or north of it, upon this level is Pritchard slate, and the country rock within which
429 the ore bodies are found to the south of the Osborn fault is Burke's quartzite. We have in that alone an indication of considerable displacement which has taken place, and when we find the Pritchard slate as high as the 200 foot level, as we do, we have still further proof of the extent of that faulting movement. We have slate developed in the 209 crosscut north of the Osborn fault on this level, shown on Plaintiff's Exhibit No. 12.

I have now followed the Stewart vein continuously without interruption from the apex drift, or rather from the wash above the apex drift to the lowest development in this Silver King tunnel level. There is another little development of ore in this territory upon what may be called the Samuels ore body. In the upper Stewart tunnel level ore was discovered and mined, and was being mined at the time of my first examination in April, 1906. This vein, unlike the vein called the No. 2 ore body in the old Stewart tunnel level, strikes northerly, whereas the vein known as the No. 2 vein strikes nearly east and west. We have again an illustration of the fact that the ground was bent around from a north and south direction to an east and west direction. The general structural features all indicate that the quartzite extending outward to
430 the south for hundreds of feet from the Osborn fault was bent in that way. The vein disclosed in the upper Stewart tunnel level is not open to careful study at the present time. A drift upon the 85 foot level discloses no ore; but a small fault fissure; whether or not the vein extends downward so far I am unable to state. There is no developed connection between this Samuels ore body and the No. 2, nor between the Samuels ore body or the Stewart vein. Their horizontal distance apart is nearly 300 feet, and whether or not there is any possible theoretical connection, I

am unable to say. That leads me to mention what we call the Clancy fault; at the top of No. 7 raise we encounter this fault striking nearly north and south and dipping about 33 degrees to the westerly. Here we have tough black clay about four inches in thickness. The stopes upward from the old lower tunnel level terminate against this clay, this Clancy fault. We have, therefore, at that point an upward termination, not upon the surface, but at a depth of perhaps one hundred feet from the surface underneath the fault. This fault is again seen at the top of raise No. 2 west, and there the vein terminates against it on its upward course. Upon the upper side of this Clancy fault there is quartzite, and in the fault
431 itself I find no indications as to the direction of the movement, nor any drag ore. The Clancy fault, or what is believed to be the same, extends to the northward, lying approximately over the stopes above the old tunnel level, and is developed in the western end of the apex drift, perhaps forty feet beneath the surface of the ground, or perhaps fifty feet at that point. There again the vein terminates in its upward course against the lower side of this little fault. That justifies us in drawing the apex or upper edge of that vein between the three points developed and along the top of those stopes, and gives us the approximate position of the upper edge of the vein in its western course. The upper edge of the vein in its eastern course has been developed, as already described, at the eastern end of the apex drift in 218 raise, in 314 east raise, just above the sill of the 300, upon the 300 level, and upon the Fir tunnel level. Those data are the facts upon which the apex has been drawn upon Plaintiff's Exhibit 3, and that is believed to represent approximately, and in fact very closely the position of the upper edge of this vein, which has a crescent shape beneath this apex, not amounting to so great a curve as this, but in part accounting for it. The structural relations, therefore,
432 appear to me that of a vein, a replacement vein, with uneven dip and irregular strike, with variations in thickness coursing through a quartzite country, striking northerly, northeasterly and nearly easterly, and finally getting around to strike almost southeasterly, terminated in its western portion beneath the Senator Stewart Fraction surface under the Clancy fault, and lying upon and terminated by the Osborn fault in its northern, northeastern and eastern direction, dipping downward beneath the surface underneath the Lazy Jean and the Ontario claims.

Q. Projecting the easterly end line of the Senator Stewart Fraction claim, and projecting the vertical plane through that line as projected, and projecting a vertical plane through the point at which the footwall of the Senator Stewart Fraction vein crosses the southerly side line of that claim, please state whether or not the Ontario ore bodies in dispute here lie between those vertical planes so projected?

A. If you project the second plane which you mentioned also parallel to the east end line, they do.

Q. You spoke of drag ore. Please state what evidence of drag ore you find at the points where the Senator Stewart vein,
433 or what we know shortly as the Stewart vein, in its upward termination, lies against the face of the Osborn fault?

A. I saw no considerable amount of drag ore there. There is some finely disseminated galena in the clay marking the Osborn fault.

Q. What is drag ore?

A. Drag ore is ore which was originally within a vein, but is now included within a fault which has faulted that vein, and this drag lies between the faulted ends of the vein.

Q. And in what position with reference to the fault will you find the drag ore?

A. It lies within the fault, not in the country rock outside of it.

Q. What is the appearance of the ore as the Stewart vein on its upward termination at the points you have described in the Senator Stewart Fraction claim lies against the Osborn fault?

A. It is not always the same in appearance; sometimes the merchantable ore does not extend directly to the fault, but the
434 vein itself is somewhat broken and crushed and has been developed in many places directly to the point of intersection, and we have an abrupt transition from the vein to the material of the fault.

Q. In addition to the different points of exposure of the apex of the Stewart vein, are there any other data which assisted you in determining the location of the apex within the Senator Stewart Fraction boundaries?

A. I have already suggested that the stopes above the old tunnel level could not be carried upward to the surface because of the existence of this Clancy fault, and we know from the cross cutting which has been made through the country in the footwall of the Osborn fault that the vein is not there, and we have seen its upward edge so continuously along with its very pronounced structural features, that I think there can be no other conclusion reached, than that this is the approximate position of its upper edge.

Q. What is the course in going from the point of apex that you have described as shown approximately on Exhibit 3, and proceeding on the vein to the ore bodies in the Ontario claim?

A. Do you wish it very exactly?

Q. No, no, I don't mean exactly, but I mean generally;
435 is it upward or downward?

A. The course is downward in a southwesterly direction.

Q. To what vein, in your opinion, do the ore bodies in the Ontario in dispute here belong?

A. They are part of the Stewart vein apexing in the Senator Stewart Fraction.

Cross-examination.

By Mr. GRAY:

Q. Mr. Winchell, you said something about monzonite and granite in connection with ore deposits in this district. They have nothing to do with the Stewart ore body or the ore bodies in the Ontario?

A. No; I intended to say that there is none of this monzonite in this immediate region.

Q. Your testimony with reference to that was general geological testimony?

A. Yes.

Q. And has nothing to do with this case?

A. No.

Q. What do you mean by the width of a vein?

A. The width of a vein is its thickness normal to the
436 footwall at any point.

Q. You mean at right angles to the footwall?

A. Yes.

Q. The Osborn fault is disclosed upon the Fir tunnel level I believe?

A. Yes.

Q. It is disclosed upon the 300 foot level also, is it not?

A. Yes, at the east end line of the Senator Stewart Fraction.

Q. It is disclosed also upon the 200 foot level?

A. It is.

Q. Would you just go to the plan map and point to the point where it is disclosed on the 200 foot level?

A. On the 200 foot level it is disclosed near station 130,—survey point 130, and from there easterly.

Q. Could you just put a blue mark at that point, Mr. Winchell?

A. I think the 200 foot level plan has it. Plaintiff's Exhibit No. 12 shows the position of the Osborn fault upon the 200 foot level.

Q. Yes. That is the point that you have marked?

437 A. Yes, sir.

Q. Is that disclosed anywhere else on that level?

A. It is.

Q. Where?

A. What we presume to be the Osborn fault is disclosed in drift No. 202 east, near station 2077.

Q. Will you point that out on the plan map?

A. There. I point to it on the plan map, station 2077.

Q. What is the width of the Osborn fault?

A. I presume it varies from two feet to a good many.

Q. What do you refer to when you speak of the Osborn fault, the mere contact between the Pritchard slate and the Burke quartzite?

A. Oh, no, not the contact between the Pritchard slate and the Burke quartzite, but I refer to the plane of movement which is marked by a development of attrition material, more or less clay and ground up and crushed rock, sometimes having a minor thickness, and sometimes being spread out suddenly to a great width.

Q. As you have seen it in that vicinity, what width has it, Mr. Winchell?

A. I think I have not seen it in this immediate vicinity
438 more than five or six feet in thickness.

Q. In other words, the fault which was occasioned by these rock masses moving on one another for a mile is in that place only five or six feet thick?

A. Sometimes not more than two feet.

Q. But its thickness where you have seen it is not over five or six feet?

A. In this immediate vicinity.

Q. And that is what you refer to when you speak of the Osborn fault?

A. Yes.

Q. I wish you would uncover that Exhibit 10. That is accurate from your own investigation, isn't it, of the property?

A. That represents my idea of it, from all the information I have been able to gather. I have not seen every single foot of the outline.

Q. Then, you do not pretend upon your testimony to say that that is in all respects accurate?

A. Sometimes the outline is indicated in broken lines; that indicates territory which I have not seen.

Q. You did not mention that before. Except where the
439 line is broken, the red outline, you do say however, that that is an accurate representation of that vein upon that level?

A. I think it is approximately correct. I have mentioned the fact that this jog down here was not actually developed and visible today, but we have reason to think it was there because of the two small fractures in the ground.

Q. You never were up there to see?

A. You cannot see it now, no.

Q. There is a considerable area between this drift marked drift No. 5 west and the main tunnel level that has not been opened to your observation?

A. No, it has not.

Q. You are simply laying the vein as you have it there because you believe it is folded and is approximately flat for a distance between those two workings?

A. Yes, and because in raise 3 east it is possible now to go up and see the fold and the vein appearing in both directions, north and south of that point.

440 Q. And that is caused by a fault which runs in a somewhat northerly and southerly direction through there between those two workings, isn't it?

A. Well, perhaps we might not agree as to which is cause and which effect. I think the fault is caused by a little fold in the rocks and marks the displacement, but the fault did not cause the bend.

Q. But there is a fault through there, that you concede?

A. Yes, sir.

Q. When you referred to the work of the sill floor there, you did not intend to convey the impression that the vein had that width?

A. No; I said the apparent width upon a horizontal plane there is not to be understood as giving a thickness to the vein of so great a distance.

Q. Has ore been removed from the areas represented here in red between this south drift and the main tunnel level?

A. There are stopes just above this sill floor reaching over part way to a connection with the sill floor stope on the north side; I

do not know how continuously. They are shown upon the
441 stope map.

Q. There is a considerable area in there where the vein has not been mined?

A. Where there is either no mineable ore or for some reason it has not yet been mined. There is very good first class ore still remaining visible at several points on the sill which has not been stoped.

Q. Is the Deering crosscut shown on that plan?

A. Yes, sir.

Q. You have not been throughout the length of that level from the Deering crosscut to its southerly face?

A. Yes, sir. A great deal of this old working is very closely lagged; the ground is evidently heavy and difficult to hold and it is impossible to get an entirely satisfactory view of the details.

Q. Throughout that entire length that level is within the vein?

A. Yes, sir.

Q. And the general course between those two points is what?

A. South 28 west, average course. Taking a straight line connecting the southern end of the old lower tunnel level and
442 the intersection of the Deering crosscut with the vein it is upon the same level. There is a crosscut at this southern end.

Q. What did you say?

A. I have measured here from the footwall to the hanging wall.

Q. I would be just as glad to have you measure from hanging to hanging?

A. Thirty one.

Q. South thirty-one?

A. South thirty-one degrees west.

Q. And that distance is how much, Mr. Winchell?

A. About eight hundred feet. It is seven hundred and some odd feet in—I cannot tell you without I scale it. (After scaling map) Seven hundred sixty-five feet approximately.

Q. The black lines going in a northerly direction from the level represent the raise at the apex tunnel?

A. No, sir.

Q. What does that——

A. That raise——

Q. Raise 4 east. I see, raise 4 east?

443 A. I have never been in that raise; I don't know.

Q. You have never been in there.

A. I have been in that raise; I am mistaken; and it does connect with the apex drift.

Q. I thought it did.

A. I thought you referred to something near the eastern end, but it does connect with the apex drift and it follows the stopes almost to the apex drift.

Q. Will you give me the course from the hanging wall at that raise to the hanging wall at that cross cut?

A. You are indicating the foot wall?

Q. I mean the foot wall. To the cross cut face--or to the foot wall at the crosscut south, face of that level.

A. South thirty-three west.

Q. The exhibit 10 you have referred to as showing the irregular outline of the vein, and in referring to that you referred to the easterly portion of the vein or the northerly portion of the vein shown thereon?

A. Yes, sir.

Q. Northeasterly. And that is caused by the flattening of the vein there which you have referred to?

A. Yes, sir. When a vein is flat it is evident that upon
444 a plan map a change of the dip of a very few degrees will make a very marked change in the apparent strike of the vein; in other words, if you have a vein which dips two degrees south and it should change in dip two degrees north you would have an entirely reversed dip and yet only a change of four degrees in that dip, and in a section through there it would show the vein dipping the opposite direction.

Q. Yes, sir. Now then, the 100 level, please. The plan of the 100 level which has been introduced in connection with your testimony, Exhibit 11, in large measure represents sections and portions of that level which you have been unable to penetrate and examine in the ground, does it not?

A. Yes, sir, a considerable portion of the level is not open to examination now.

Q. Been caved for——

A. I don't know how long, but it is caved.

Q. What portion of that level were you able to get into?

A. In raise 218 east, the eastern end of the stopes can be seen. The vein can be seen southerly from the shaft upon this
445 level.

Q. How far?

A. Only for a short distance northerly and southerly.

Q. Approximate it.

A. Well, it is caved right around——

Q. You can only see it for a few feet?

A. Only a few feet.

Q. Up here at the northern end how far can you observe the vein there?

A. You cannot see it, but we have the stope maps——

Q. Just the end of the stopes?

A. Yes, sir, and the stope maps show the position.

Q. And between those two points, of course, you have made no examination yourself?

A. No.

Q. And do not know what it discloses. And the fact is that the same is true of the 100 level from a point just a few feet from the shaft on southerly?

A. That is true.

Q. Now, let us have the level just below that. That level so far as it is disclosed on there, you have not been in?

446 A. I have, throughout its length practiaclly all the way. I have not seen the full width of the vein at some places where it is indicated here, but the vein and the indications of stoping and vein material can be seen from one end to the other.

Q. I note that you have certain blue lines on the section. What do those represent, Mr. Winchell?

A. The tracing of faults.

Q. I see. You have one in the drift 202 east?

A. Yes, sir.

Q. You also disclose on there the No. 11 fault?

A. Yes, sir; that fault is seen upon the level and in the stopes just above where the vein passes through it without visible displacement.

Q. The width of the vein upon that level according to the section which you have prepared differs as you follow along the level?

A. Yes.

Q. Is that because of local folds or flattening of the vein at places?

A. I should not think so so much in this case, but rather the irregularities of mineralization or replacement of the quartzite
447 country.

Q. To some extent it is by reason of the——

A. I presume in places it is flatter than at other places.

Q. Just west of what is marked R 304 east and north of the words drift 205 east the vein is shown at a considerable width; is that width disclosed on that level or is it projected upon the plane of the section?

A. It is shown in the first floor above the level.

Q. In the first floor?

A. The first floor as indicated here.

Q. From this first floor it is projected on to the plane of the section?

A. Yes, sir.

Q. What is the width of the vein at right angles to the foot wall there?

A. I don't know.

Q. Now, if you will take the level just below. Exhibit No. 13, 300 level, is there anything projected on to the plane of that section, Mr. Winchell?

A. The outline of the vein is placed upon the section from what can be seen upon the sill and the first floor and the first floor
448 stopes are traced upon this exhibit 14 in orange. They prove actual stoping widths for the distance to which they are developed, and we know that the vein in its widest part has the width shown upon the section. There is some little projection.

Q. Projection on to the plane of the section. Upon the level and leaving out of consideration the stopes above the level which you have projected on to the plane thereof, what is the width of the vein as actually disclosed upon that level?

A. Substantially as shown upon plaintiff's exhibit 13 along the south side line of the Senator Stewart Fraction.

Q. You have extended that vein upon that claim from what is marked thereon "300 lateral" to the drift in which you find the station 2016?

A. Yes, sir.

Q. What is your justification for doing that, Mr. Winchell?

A. Because that is all vein material.

Q. How do you know?

A. Because I can see it.

449 Q. Any faults in there?

A. Oh, there are numerous little slips running around in various directions, but the vein is perfectly visible and contains very good ore.

Q. What is the width of the vein at right angles to the foot wall there?

A. I don't know; it is rather flat there.

Q. That gives it the apparent width that is shown upon the sill floor?

A. Yes, and that flat portion extends downward into the stopes and very large and wide stopes showing the veins to be flat between there and the 400 level below.

Q. That extends over on that level into what is known as the Gray ore body in the Ontario?

A. It does. It extends over until its connection with the top of the stopes in the Gray ore body.

Q. Then the No. 11 fault comes in there and you find the Frank ore body on beyond the No. 11 fault?

A. The Gray ore body is north of the No. 11 fault and the Frank ore body south.

Q. Mr. Winchell, upon that little level you can start upon
450 the vein as it comes against the Osborne fault and walk along that level until you walk into the ore bodies in the Gray stopes within the Ontario, do you not, as shown upon your plan?

A. Yes; you walk into a connection with those stopes.

Q. Walk within the vein all the time?

A. Yes, sir.

Q. And upon the level. Is that correct?

A. Practically level, yes, sir.

Q. And then after bridging the fault you find the Frank stopes, the Frank ore body, on the same level?

A. Yes, sir.

Q. Now, if you will kindly put up the 400. This exhibit 14, the 400 level, is there anything projected on to that, on to the plane of that section?

A. There is. There is no immediate connection between the vein as shown in the lateral just west of the shaft, south of the shaft, and the drift known as the Gray drift upon the Silver King tunnel level. The elevation is not precisely the same, of the two levels, but they are so closely the same that they can be shown upon the same plan.

The outline of the ultimate limits of the vein may vary from
451 its position as shown upon this map. The first stope that I refer to as shown upon plaintiff's exhibit 13 running down

is the upper portion of this long tunnel shown upon plaintiff's exhibit 14.

Q. There was on- thing I wanted to ask you; what is the scale of all of these maps?

A. Thirty feet to one inch.

Q. The section four which corresponds, I presume, with the section four Mr. Clancy has testified concerning, is shown on this exhibit No. 13?

A. Yes, sir.

Q. Will you tell me how far from that section the foot wall of the vein as you have disclosed it upon that exhibit 13 is along the Osborne fault?

A. Along the fault?

Q. Yes, sir.

A. It is about ninety-two or three feet.

Q. Yes, sir. On the same level that section passes right through the center of the ore body in the Gray stopes within the Ontario, doesn't it?

A. Yes, sir.

Q. And the distance from the Osborne fault, the point
452 which you measured, from there to the lowest point at which you have shown the Gray stopes, that is, the southern end of your stopes upon your plan is how many feet?

A. About 650 feet.

Q. The course of that section four is south twenty-four west, I believe?

A. Parallel to the east end line of the Senator Stewart Fraction.

Q. On the 400 level I see also depicted the section 6 which is the same one which Mr. Clancy has testified to?

A. Yes, sir.

Q. As that section crosses the Osborne fault shown upon your plan how far is it to the west of the hanging wall of the vein on that level?

A. Measured along the fault, the difference is approximately one hundred feet.

Q. That line of section passes just beneath the Gray drift on that level?

A. Yes.

Q. And the course of that section is parallel also to the east end line of the Senator Stewart Fraction?

A. It is.

453 Q. And the distance between the two points that you have measured is how many hundred feet?

A. It is about 760 feet.

Q. And then after passing over a small fault, or passing beyond a small fault into the May drift and the No. 11 fault you come into the Frank ore body still further to the south?

A. Yes, sir.

Q. And the course of that ore body is what?

A. About south 36 west at that point—for that distance.

Q. What did you say?

A. About south 36 degrees west for that distance.

Q. I understood you to say that where the solid red lines are shown upon the exhibit you by your own investigation are able to place the vein upon that section?

A. Well, I see that the draftsman has connected the line more continuously than I supposed——

Q. More continuously than you would from your investigation?

A. Yes; you cannot actually see that boundary of the vein;

454 it is broken on one side and indefinite on the other.

Q. Yes sir; taking the red line on the eastern side representing the eastern wall of the vein upon that level at the point where you have depicted the Osborne fault and from there to the shaft there is really no working on that level extending out that far, is there?

A. No, but on the first floor above the level we have ore nearly as far.

Q. Yes, sir. I noticed when you placed the first floor above the level upon the map you have extended that to the westerly end of those stopes and you give to the vein upon this level a greater width than it apparently *it* has in the stopes above. Why do you do that, Mr. Winchell? What justification is there for believing that the vein is wider on that level than it is in the stopes above?

A. That is not always so; that is not intentional in any way; but in the 409 crosscut we know where the vein is and what its dip is, and we have it down here on the sill floor.

Q. Coming back to the question I just asked you, what jus-

455 tification is there for making the vein wider upon that level than it appears in the stopes above the level from which you get its width at that point?

A. The observations which we have been able to make in both places. The 409 crosscut is upon the level, it is not in the stopes, and we have the ore and the vein in that crosscut, and we have not reached its limit. The drift 415 east is on the sill floor and we have not reached the limit of the ore there or the vein. Consequently we are justified in drawing it some distance beyond the point where we actually see it and we have given it that position. We have it also in the drift which discloses the Osborne fault upon that level. It might be a few feet one way or the other.

Q. You also have the vein—what was the width of the vein as disclosed by the shaft which you—is that shaft in the vein?

A. No, sir.

Q. It is under the vein?

A. Yes, sir.

Q. I notice a raise here marked raise 471 east; is that in the vein?

A. That is in the vein.

456 Q. The raise 400-A, is that in the vein?

A. It is part way; I do not think it is all the way.

Q. It goes through the vein, does it?

Thereupon an adjournment was taken until 2:00 o'clock P. M. of this day, Thursday, January 9, 1913.

457 2 P. M.—THURSDAY, *January 9th*, 1913.

HORACE V. WINCHELL resumed the stand for further cross examination.

By Mr. GRAY:

Q. Mr. Winchell, on the 300 level map, Exhibit 13, you show the line No. 4 through the Gray drift. What is that drift upon the section introduced by Mr. Clancy, Exhibit No. 4?

A. This is the Gray drift.

Q. The drift connecting the Gray drift?

A. The 300 foot level.

Q. The 300 foot level connecting the Gray drift——

A. No, it is above the Gray drift.

Q. It is connecting with the Gray ore body in the stopes of the Gray, isn't that true?

A. The south end of this drift connects with the stopes.

Q. And that is a drift on the vein?

A. Yes.

Q. Show me where that is on Exhibit No. 4 being section 4?

458 A. The point where the cross section on Plaintiff's Exhibit 13 enters the 300 foot level or passes through the level is shown upon Exhibit No. 4 in the red band about 70 feet to the west or south of the line which indicates the Ontario west end line.

Q. Just point on that map?

A. Here.

Q. That line also runs in that vein on that drift, doesn't it?

A. As indicated it does; I have indicated that by the red.

Q. But it is not shown on section 4, Exhibit 4 there, is it?

A. I think it would be more accurate to represent the position of the drift upon the section at a greater distance than it has been shown.

Q. That is on section 4?

A. On section 4, exhibit 4.

Q. Now, going back to Exhibit 14 on the 400 foot level, I referred to a raise which is marked raise 400A. Isn't there another shaft—another raise just south of the shaft, Mr. Winchell, that is not shown on that plan?

459 A. Do you mean another raise or another shaft?

Q. Another raise?

A. There is a raise south of the shaft station.

Q. That is not shown on Exhibit No. 1 or on your exhibit No. 14?

A. It would lie directly underneath the working shown on the 300 foot level on exhibit 1.

Q. But it is not shown there so that you can see it?

A. No, it is not.

Q. And it is not shown on your exhibit No. 14?

A. No, sir.

Q. Now, in order to be an accurate plan, that ought to be on there, shouldn't it?

A. Yes, in order to show all the workings, it ought to be there.

Q. Now, that is on the plane of this section, I mean it is on the level of the 400, exhibit 14?

A. I think the raise starts from this level, yes.

Q. Within what you have marked there as the vein?

A. Yes, sir.

Q. Is that raise entirely in the vein, Mr. Winchell?

A. I don't know; I have not been up it.

460 Q. Haven't you?

A. No, sir.

Q. Isn't it true that, in order to determine the width of the vein here and again on the level that you should have gone up that raise?

A. I should have gone up if it was open, but I don't know that it was.

Q. You don't know whether it was open or not?

A. No.

Q. You have it in your note book, though?

A. Yes.

Q. But you didn't go up it and you don't know what it will show as to the width of the vein?

A. No, I don't know. I don't suppose it would disclose the full width of the vein anyway.

Q. Now, going over to the point on the 400 foot level, Exhibit 14, where you show the vein cut off by the Osborn fault, there is what is marked "Raise" there to the north of the Osborn fault?

A. Yes.

Q. And you show the vein in the little extension of the 400 foot level along the Osborn fault?

461 A. Yes.

Q. Is there any other raise at that point or within a few feet, which is not shown upon this plan?

A. There is another raise. There are a good many raises that are not shown on these plans.

Q. Yes. I refer to one about 10 feet west of the raise that is shown?

A. Yes.

Q. And that raise goes up about how far?

A. I don't know; I have been up that raise to the top of the ore in it.

Q. Is there ore in that raise?

A. I have been up the raise on the fault.

Q. Point it out to the court so that he will see just where it is?

A. The raise is just west of 415 east raise, and I recall starting and seeing ore at the foot of that raise.

Q. Is there any ore in that raise?

A. I don't recall distinctly any ore in the raise. It goes off up there. I think there is ore in the raise.

Q. You would not be prepared to say that there was?

A. Well, no; I think a little ways to the west of there we

462 find ore going up on that.

Q. I am speaking of that raise now?

A. I will see if I have any notes. No, I am not prepared to

state that there is not ore extending up that raise for a considerable distance.

Q. Now, then, going to the tunnel level, I want to call your attention to the raise which runs in a northwesterly direction upon exhibit No. 10 from the red line which you show as the footwall of the vein on that level; is that raise No. 6 W.?

A. Yes, I think so.

Q. Did you go up that raise?

A. Up to an intermediate level, I did.

Q. You did not go up beyond that?

A. I followed some distance further up through some old stopes.

Q. That raise is a raise on the vein?

A. Yes.

Q. What is the dip of the vein as disclosed in that raise?

A. It is considerably steeper than the vein upon this floor. I don't recall the exact dip.

463 Q. You cannot give us the exact dip?

A. No.

Q. Did you follow along this what you call the intermediate level on exhibit No. 1?

A. For about two-thirds of its distance to the north.

Q. That is, over to the bend?

A. To the bend and just beyond the bend.

Q. That was in vein?

A. Yes.

Q. What was the course of that drift as far as you followed it from the point where you got into it to the point where you quit following it?

A. About north 25, east.

Q. There are some other raises up along there above the tunnel level, are there not, Mr. Winchell?

A. There are.

Q. Did you go up any of those other raises to the south of the one now that you have referred to?

A. I think I went into every raise that is accessible.

Q. What was the dip of the vein as disclosed in those other raises to the south?

A. About 45 degrees.

464 Q. And the direction of the dip in those raises?

A. To the southeasterly.

Q. What was the course?

A. Well, the course of the raise or the dip of the raise?

Q. The course of the dip as disclosed in the raise?

A. Well, the dip is not disclosed in the raise.

Q. The direction of the dip?

A. Neither the direction of the dip nor the dip itself are necessarily disclosed in the raise. The raise is within the limits of the vein.

Q. And you were not able to get it in those raises?

A. No. No observation taken of such a point would disclose the true dip or strike of the vein.

Q. Now, go back to Exhibit No. 1, the plan map, and I want you

again to point out to me where it was—did you mark where on the 200 foot level you had the Osborn fault disclosed?

A. I have marked it now.

Q. That is along about Station 129?

A. From station 129 easterly.

Q. Now, where did you have it disclosed in the Fir tun-
465 nel level?

A. It is disclosed a short distance east of station 2519.

Q. And where else on the Fir tunnel level?

A. What I suppose is the Osborn fault, though there is not any very satisfactory development, is in the north end of what is called the 400 north crosscut.

Q. Now then, what is the difference in elevation, vertically, between the points in the end of the 400 north crosscut and the 200 level that you have referred to as disclosing the Osborn fault?

A. Approximately 160 or 165 feet.

Q. Is there any place else on the 200 foot level where it is disclosed, Mr. Winchell?

A. Yes; I find a fault upon the 200 foot level near station 2077 which I connect with this Osborn fault as shown at the eastern end of the level.

Q. What is the steepest dip of the Osborn fault that you have been able to ascertain in your investigation of this property?

A. I should think its steepest dip was about 70 degrees.

Q. What is the vertical distance between the points where
466 you have seen it near this station 2077 and the north end of the 400 north crosscut?

A. The elevation is not given of the north end of the 400 north crosscut, but it is not far from perhaps 2603, or something like that, which would make the vertical distance about 155 or 160 feet.

Q. And the horizontal distance between those two points is what?

A. About 175 feet.

Q. Isn't it more than that, Mr. Winchell—all right, take it at 175. What is the angle, then, of the dip between those two points?

A. That would be about 40 degrees. We know that the Osborn fault does flatten going in that direction.

Q. In your judgment, which is the older, geologically, the vein or the fault, Mr. Winchell?

A. The vein.

Q. What was the condition, in your judgment, as to a vein continuing on in the general direction of this vein prior to the faulting?

A. I presume there was a vein in that ground, which was first bent and then faulted, and that the vein did continue in
467 some direction beyond where the Osborn fault now terminates it. That portion of the vein was up in the air and is now——

Q. That is after the faulting?

A. — is now in that portion of the country which is now up in the air, and there are no rocks and no veins.

468 **Redirect examination.**

By Mr. DINES:

Q. Mr. Winchell, you were asked about going on the 300 level, if you could not go on the 300 level from the Gray and the May ore bodies to the Stewart vein near the easterly end of the Stewart claim? What part of the Stewart vein could you go on on that level?

A. We followed the vein in a somewhat winding course around near its footwall upon this level, but not in a direction immediately parallel to the east end line of the Senator Stewart Fraction. We followed through one of the flat places in the vein.

Q. What part of the May and Gray ore body does that go into.

A. It reaches the stopes above the Silver King tunnel level upon the Gray ore body.

Q. And how do you go from those stopes into the level?

A. Down a considerable distance, down a raise or down through the stopes.

Q. And how do you get to the points of apex on the Stewart vein on that level as detailed out toward the end line?

469 A. A portion of the vein is above the level of the 300 at the apex and a portion of it is immediately upon the level.

Q. How do you reach that portion that is above the level?

A. That is in the stopes just over the sill.

Q. Are there any other upraises than the one you have referred to in the Ontario ground that you have to go through in reaching the point in question?

A. Yes. There is another—to reach the Frank ore body?

Q. Yes, sir.

A. We can go down another raise likewise a similar distance to reach the Silver King tunnel level, stopes made upward upon the Frank ore body and continuing now are as high as the level or higher. I did not answer the other question, the preceding question, completely. 218 east raise shows the—no, I am mistaken again; that is the stopes. We find the dip of the ore in the stopes above the 300 level just west of the end line.

Q. Right in the stopes or is it above?

470 A. In the stopes and above; a portion of the vein appears on the level, a portion of the apex on the level and the remainder of the apex above the level in the stopes and along running up raise 314 east.

Q. Now, on Exhibit 1 there are some workings in the Lazy Jean and Switchback, which appear to be out in the Switchback and running down on the ore body; how do you account for it being practically on a level with this 400 level?

Mr. GRAY: I object to this as improper redirect examination; it seems to me if counsel is going over these things he ought to do it in direct examination.

The COURT: Objection overruled.

A. The ore body represented in this tunnel upon Plaintiff's Exhibit 14 is not a portion of the main course of the vein. It is one

of the irregular bodies of mineralization extending out into the hanging wall country and at this point very flat.

Mr. DINES: That is all.
Witness excused.

471 ALFRED FRANK, called as a witness on behalf of the plaintiff, being first duly sworn, testified as follows:

Direct examination.

By Mr. GUNN:

Q. State your name to the stenographer, Mr. Frank?
A. Alfred Frank.
Q. I understand you are a mining engineer by profession?
A. Yes, sir.
Q. Are you a graduate of any technical school, and if so, what school?
A. I am. I am a graduate from Cornell University as a civil engineer in the year 1898.
Q. And what experience have you had in the line of your profession and work?
A. About the first of February, 1900, my experience in the mining business and as a mining engineer started. At that time I obtained employment in Butte as a surveyor or assistant surveyor in the mines there, and I have since that time been continuously
472 engaged in the profession of a mining engineer, having at various times filled positions as mine surveyor, shift boss, foreman, superintendent and manager of mines.
Q. Has your experience covered any other section of country than that of Montana?
A. Yes, sir. For the past two and one half years, I have been general manager of the Ohio Copper Company with headquarters at Salt Lake City, the mines being located at Bingham, Utah. During the past ten years I have made examinations in various parts of the country including Montana, Idaho, Nevada and Utah and also in Mexico, Alaska and British Columbia.
Q. I take it that your experience has been principally with quartz mining properties?
A. Yes, sir.
Q. Are you acquainted with the property in controversy in this litigation?
A. I am.
Q. When did you first visit that property and become acquainted with it?
A. I first visited the Stewart mine in the fall of 1906; it was probably the month of September or October, and since that
473 that time I have at varying intervals and over varying periods visited the mine very frequently.
Q. Have you recently made an examination and investigation of the property with a view to qualifying yourself to testify in this case?
A. I have.

Q. To what extent has your investigation and examination gone, speaking with reference to the workings in the property?

A. During the period covering all the time from that I first mentioned, that of my first visit to the mine in the fall of 1906 and until the present time I have visited the mine very frequently always with a view—in the capacity of consulting engineer and in connection with the actual operation of the property. At such times I naturally visited and examined practically all of the operating faces which were open, and during the past few months I have re-examined all of the workings at this time accessible, or I should probably say nearly all of the workings at this time accessible.

Q. Could you turn to the map and briefly outline the portion of the workings which you examined at the time of your first
474 acquaintance with the property in 1906.

A. At the time I made my first visit to the property in the year 1906 I entered and examined the workings designated on this map as the upper Stewart tunnel level.

The COURT: This is Exhibit 1, Mr. Reporter.

A. Yes, sir, on Plaintiff's Exhibit 1. Also, the workings designated on Plaintiff's Exhibit 1 as old lower Stewart tunnel which at that time was extended to the point somewhere in the neighborhood of the workings marked Samuels raise; I am not positive as to the exact extent of the workings at that time, and without referring to old maps in use at that time would not attempt to locate the definite extent of those workings at that time. Also, the workings marked hereon as drift 1 E and drift 2 W in the 35 foot level, all of which existed in part, at least in part at that time.

Q. Are you also familiar with the workings beneath the surface of the Ontario as depicted on that map Plaintiff's Exhibit 1?

A. I am familiar with the workings beneath the surface of the Ontario as depicted on Plaintiff's Exhibit 1 with the excep-
475 tion of the working colored red, and which is a lower working than that of the Silver King tunnel. I have not visited that—I have not entered that working.

Q. Directing your attention to the workings easterly of a line at right angles to the south side line of the Senator Stewart Fraction claim drawn through the top of raise No. 2 west, I will ask you how many veins are disclosed in those workings.

A. There is one main vein disclosed in those workings, which vein of course has in some instances smaller more or less important off-shoots in one direction or another.

Q. What evidence is there in the ground from which you draw the conclusion that there is but one vein?

A. These workings are all extended on a vein and on ore bodies mined continuously and connecting one with the other, and where cross cuts do extend out to one side or another of this vein they encounter nothing other than in some instances the more or less important off-shoots from this vein which I have mentioned.

Q. Then are we to understand that the ore bodies in the Ontario are considered by you to be part of the same vein as the ore bodies in the Senator Stewart Fraction?

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A. Yes, sir, they are. They can be traced by—they can
476 be connected by tracing of continuous workings on openings made in the course of mining operations, such openings being made in part from and by the workings of the Ontario but mainly by and from the workings of the Stewart Mining Company.

Q. State whether or not any top of the apex of that vein is to be found within the lines of the Senator Stewart Fraction claim?

A. It is. The apex of that vein is found crossing the easterly end line of the Senator Stewart Fraction claim at a point near the center of this easterly end line, and a projection on a plan or horizontal surface of this apex would show it as depicted on Plaintiff's Exhibit No. 3, that is, first in a northwesterly direction, then bending around and assuming a southwesterly direction.

Mr. GUNN: I would ask to have this model marked for identification.

The COURT: It will be marked Exhibit 15—isn't it?

Mr. GUNN: Yes, sir.

The said model was thereupon marked Plaintiff's Exhibit 15 for identification.

477 MR. GUNN: Directing your attention to the model which has just been identified as Plaintiff's Exhibit 15, I will ask you what that model was intended to illustrate or represent?

A. This model was intended to illustrate and represent the apex of the Stewart vein, its relation to and its position on the Osborne fault, its position at the uppermost point of the bend which is shown on Plaintiff's Exhibit 3, and also its relation to and postion under what is known as the Clancy fault. The model shows the apex of the vein and its continuation downward, that is, the continuation downward from this apex to a point a short distance southerly from the south side line of the Senator Stewart Fraction claim.

Q. State under whose direction and supervision that model was made and from what data, if you know?

A. The model was made from data gathered by the engineers of the Stewart Mining Company, all of which data agrees with and checks with the maps heretofore introduced, and particularly the map marked Plaintiff's Exhibit 1, and while the model was not constructed by myself I assisted in the construction thereof and
478 observed and examined carefully the drawings from which it was constructed.

Q. What is the scale of that model, if it has a scale?

A. Forty feet to the inch.

Q. Is it thirty?

A. I believe this model is on a forty scale.

Mr. GUNN: We offer the model in evidence.

Mr. GRAY: I want to examine him some about this model before we receive it. I can do that, though on cross examination. You can go right ahead.

Mr. CULLEN: You can do it now, if you want to.

Mr. GRAY: No, I will wait until he is through with Mr. Frank.

The COURT: You can proceed with the examination of Mr. Frank.

Mr. DINES: It can be used, I suppose, for illustration by this witness?

The COURT: Yes sir; I will let Mr. Gray cross examine him and hear his objection before I will admit it in evidence, but you can use it for the purpose of illustrating the evidence.

Mr. GUNN: Very well.

479 Q. If the surface lines of the Senator Stewart Fraction claim are shown on that model, please point them out to the court?

A. The east end line of the Senator Stewart Fraction claim is drawn on the top glass, the glass forming the top of this model as it also the line representing the south side line of the Senator Stewart Fraction claim.

Q. Explain what the red lines shown on that model are intended to illustrate?

A. The red lines painted on the various sheets of glass forming the sectional parts of this model represent the Stewart vein on its downward course into the earth and beneath the surface of the Senator Stewart Fraction and in part beneath the surface of the Senator Stewart claim.

Q. What are the heavier blue lines against which most of the red lines terminate intended to represent?

A. They represent the Osborne fault as it is cut by the various sections of which this model is composed, by the planes of the various sections of which this model is composed.

480 Q. I notice also some lighter blue lines extending almost at right angles to the heavier blue lines; what do those represent?

A. These represent what is known as the Clancy fault and against which the vein in the westerly and southerly part of the Senator Stewart Fraction claim finds its apex.

Q. And in looking through the model we notice some black marks, squares, and different figures. What do those represent?

A. They represent the workings, the mine workings cut by the planes of section represented by the separate sheets of glass.

Q. What have you to say regarding this model illustrating or representing the location of the Stewart vein and the Osborne fault and the relation of one to the other and the relation of both with reference to the surface lines of the Senator Stewart Fraction claim?

A. It correctly represents these in so far as the maps from which it is constructed are correct. Of course, I cannot, not having made the surveys from which the working maps of the Stewart Mining Company and the working maps which are used in this case—I cannot testify as to the correctness, the absolute correctness nor
481 accuracy of these maps, but the model is correct in its representation of the same conditions as illustrated on these maps, and the model is constructed mec-anically and mathematically from these maps.

Q. Then, assuming that the maps are correct and the survey and data from which the maps were made were correct, what have you to say regarding the correctness of this model so far as it purports

to represent measurements and—I am speaking of the maps that have been offered in evidence here as plaintiff's exhibit 1 and any other maps containing data that has been used in the preparation of this model?

A. This model is correct.

Mr. GRAY: It occurs to me that we ought to have these—if it is prepared from some other maps that have got something else on them, that we ought to at least be able to see them.

A. I could probably add to that, that it is prepared from a map which is an exact duplicate of this map except in so far as it is drawn on a different scale.

Mr. GUNN:

Q. "This map", plaintiff's exhibit 1?

A. In fact, plaintiff's exhibit 1 is copied from largely
482 copied from the same map which was used in the construction of this model.

Q. Then I will ask you to what extent the data from which this model is made is shown upon the map introduced in evidence as plaintiff's exhibit 1?

A. The data from which this model is made checks and corresponds with that from which plaintiff's exhibit 1 is made and on which plaintiff's exhibit 1 is based.

Mr. GUNN: Do you want to conduct the cross examination before the model is accepted in evidence?

Mr. GRAY: Yes, sir, but I will wait until you are entirely through with Mr. Frank. Go ahead.

Mr. GUNN:

Q. Directing your attention again to the plan map plaintiff's exhibit 1, I will ask you whether or not the ore bodies in the Ontario are on a lower or higher plane than the plane of the apex which you have referred to in the easterly portion of the Senator Stewart Fraction claim?

A. The ore bodies in controversy beneath the surface of the Ontario claim are lower in elevation than the elevation of the apex contained in the easterly part of the Senator Stewart Fraction
483 claim and which apex has before been referred to be me in my description of the model.

Q. State whether or not there is any point along that apex on a line parallel with the easterly end line of the Senator Stewart Fraction claim that would cut any part of the Ontario claim that is not on a higher plane than the plane of the ore bodies or vein in the Ontario plane.

A. If a plane parallel to the easterly end line of the Senator Stewart Fraction claim be taken at a point through the furthermost west part of the Ontario claim, this plane would cut a section of the apex of the Stewart vein higher than the workings in the Ontario plane.

Q. State whether or not that is true with reference to any plane that could be taken between the plane that you have just referred

to and a plane dr wn through the easterly end line of the Senator Stewart Fraction claim?

A. The same is true. Any plane taken between the easterly end line of the Senator Stewart Fraction claim and parallel to this end line will cut through the workings in the Ontario plane, through the ore body contained within the workings in the Ontario claim, at a point lower than that at which it cuts the apex of the vein
484 in the Senator Stewart claim.

Q. Now, directing your attention to the workings on the map—the westerly portions of the Senator Stewart Fraction and the Senator Stewart claims, and I will ask you what, if any, relation the vein and the ore bodies in those workings have to the vein which you have referred to as the Stewart vein disclosed in the easterly workings?

A. They are on the same vein and on the same ore body.

Q. Read the question to him; I do not think the witness understood it.

(Question read.)

A. I assumed you meant these workings right here (indicating).

Q. To make myself more definite, I will ask you what relation, if any, the vein or veins and ore bodies west of the line drawn through the southerly side line of the Senator Stewart Fraction claim at right angles thereto at the top of raise No. 2 have to the workings easterly of that line or the vein disclosed in thos- workings?

A. They are on separate and distinct unconnected ore bodies, ore bodies and veins which are not connected in any way with
485 the workings in the Senator Stewart and Senator Stewart Fraction claims on the Senator Stewart or on the Stewart vein.

Q. Where does the Stewart vein terminate northerly and southerly, on a line drawn northerly and southerly across that map?

A. I do not understand your question.

Q. You have told us that the Stewart vein has its apex along the line extending westerly from the east end line of the Senator Stewart Fraction claim, have you not?

A. Yes, sir.

Q. Now, if there is a termination on any line drawn substantially parallel with the easterly end line of the Senator Stewart Fraction, show us where that line would be.

A. The termination of the Stewart vein on its upward course is in the westerly part thereof against what is known as the Clancy fault. That fault passes through the top of raise—what is marked on plaintiff's exhibit 1 as raise 2 W., at about the point marked in pencil W. on this map. That same fault is shown in the apex drift at the point marked "W-2", and the plane of this fault is shown also in the model, marks the termination of the vein in its up-
486 ward course in the westerly or central part of the Senator Stewart Fraction claim.

487 Q. I wish you would take off the top of that model, the surface, and point out to the court if you will, please, what

you designate as the apex of the Stewart vein along the Osborn fault?

A. I would have to get a screw driver to do that.

The COURT: I can see it very readily without that.

A. On this model I can point out the elevation of the various levels, the 400 or the Fir tunnel level is shown about where I hold my pointer here, and the 300 is shown by this working where I now hold my pointer, the 200 is shown about there and the 100 right about there at the present position of my pointer. The lower Stewart tunnel is there, and the apex working or the apex drifts are probably better to be seen from this side. The portion of the glass section that is cut off is intended to represent the surface in this part of the model; the apex drift workings are about in there, and this little working in here.

The COURT: I understand. The light blue lines represent the Clancy fault?

A. Yes, sir. Beginning now, taking the plan map and using the plan map in conjunction with the model, I can first trace the
488 apex through its course in the center of the Stewart Fraction claim on the plan map, and then show it on the model; I think that would probably be the best way that I can do it.

Mr. GUNN:

Q. Yes, if you will do it that way.

A. We have the apex of the Stewart vein disclosed in the northerly end of the apex drift at about the point marked "W. 1". At that point it intersects—well, it does not exactly intersect but it comes into intersection with, and lies on the Osborn fault. The same is true of the old lower Stewart tunnel level at a point near survey station 2512. The same on the 100 and in the raise connecting the 100 foot level with the lower Stewart tunnel level; then on the 200 level a short distance from the bottom of raise marked 218 east, and on the 300 level near survey point 2569. Taking this same section of the apex as shown on the model, we have it first in the extreme easterly end of the apex drift just about where I am holding my pointer, and from there on it extends in a downward course on the Osborn fault at about the inclination of the pointer as I hold it, and is shown by this representation on the successive sheets of glass between this point and the point where the
489 easterly end of the drift is shown. The apex westerly from the point at which I started, that is the first disclosure of the Osborn fault in the apex drift, and we have the vein or a portion thereof shown in and on the apex drift, the real apex of the vein being a short distance above the elevation of this drift. At the westerly part of the apex drift near point W. 2 the Clancy fault is encountered and the vein has its apex under the Clancy fault as shown by the section against which I have my pointer, right there. That particular section is the fifth sheet from the westerly end of this model; going from *from* there to the extreme west end of this model the vein is shown as against the Clancy fault on the various sections there. On this map, Exhibit 1, the vein is disclosed as

having its apex against the Clancy fault at the top of the raise W. 2, and at various points in the stopes above the Stewart lower tunnel level where these have been extended to an intersection with the Clancy fault.

Q. Now, directing your attention again to the model for a moment and that part which purports to represent the Osborn fault, I will ask you whether or not they are workings that dis-
490 close that fault and its location to the extent shown upon the model, or whether there are sub-projections of the fault in making that model?

A. There naturally have to be a number of projections. The strike or course of the fault as shown in the lower part of this model is that taken as fixed by the fault as located on the fir tunnel level where the same first cuts the fault, particularly at the point in drift 405 East, and the small branch extending out there from which raise 415 east is raised. The Osborn fault is shown in this working, and again in what is marked on this map as 400 north crosscut. The Osborn fault is shown at the extreme end of this crosscut, and that fixes the strike or course of the Osborn fault which has been used in painting the same on the various sections of this model; that is, that fixes the strike which has been used in the lower portions of this model. On the upper portions we have taken the intersections of the various planes represented by the sheets of glass in the model, with the intersections of the Osborn fault as actually disclosed in the workings on the 300 foot level, on the 200 foot level, on the 100 foot level and on the old lower Stewart tunnel level, and on the apex drift level, these being
491 in or near the extreme easterly end of these various levels.

Q. Now, I notice that the sections in this model are not on lines or planes parallel with the easterly end line of the Senator Stewart Fraction claim. Why were those sections produced at an angle instead of on lines parallel, if you know?

A. The base or general outline of the model was taken at or nearly parallel to the side lines of the Senator Stewart Fraction claim. The planes of section were taken at or nearly at right angles to the course of the Osborn fault as shown on the 400 or Fir tunnel level, and were so taken because at that angle they more nearly cut the apex at right angles than at any other one position which we found it possible to take the section in.

Q. I want to call your attention here for a moment to these cross sections. The first is Plaintiff's Exhibit No. 8. Point out on the plan map the lines through which that cross section was taken, which is Cross section 6?

A. That cross section six was taken on a line parallel to the easterly end line of the Senator Stewart Fraction claim, and is marked on plaintiff's exhibit 1 as section line six.

492 Q. What is the angle of declination as the vein departs from the apex as shown by this cross section?

A. The angle is about 45 degrees. It is shown on this cross section at about 40 degrees.

Q. And that was taken along the hanging wall?

A. Well, the hanging wall is shown flatter, and the foot wall is shown steeper than that. The hanging wall is shown at a dip of about 35 degrees and the departure of the foot wall shows a dip of about 40 degrees.

Q. The average dip would be about what?

A. The average dip of that section of the vein would be about half way between.

Q. For what distance downward is approximately that dip maintained?

A. That dip is maintained from the 200 level—from a short distance above the 200 level downward for about 60 feet in vertical depth, and then the vein becomes flatter, that is, the vein on the plane of that cross section becomes flatter.

Q. I will ask you to give me the declination or downward course of the vein from the apex as shown by this cross section 4,
493 which is also Plaintiff's exhibit 4, as it leaves apex?

A. The hanging wall of the vein as it leaves the apex as shown on the plane of this section, has a dip downward of about 43 degrees.

Q. And for what distance does it maintain approximately that dip?

A. For a distance of about 135 feet.

Q. I will ask you to give us the same information with reference to cross section No. 5, Plaintiff's Exhibit 9, that you just gave with reference to that cross section?

A. The vein as it extends downward from the apex on the plane of this cross section has a dip of about 42 degrees, which is maintained on the plane of this section for a distance of about 250 feet on the slope of the vein.

Cross-examination.

By Mr. GRAY:

Q. With reference to the case end line of the Senator Stewart Fraction, the sections are taken at an angle diverging from the course of that line, aren't they?

A. The sections are taken at an angle diverging in a south-
494 erly direction from the course of that line. I think the angle is about 15 degrees.

Q. What is the course of the sections?

A. Well, if I remember correctly, the course of the east end line of the Senator Stewart Fraction is about south 24, west, and the course of the planes of sections used in the construction of this model were made at about 15 degrees to the south; in other words——

Mr. FOLSOM: You mean east, do you not?

A. Well, to the east or south, either one, so that the course of these planes is about south 9, west.

Q. Are they all exactly parallel, the sections?

A. Yes.

Q. And south 9, west?

A. I think that is approximately the course; it might vary from that by a degree or so, but not more than that.

Mr. GRAY: I suggested to Mr. Gunn, your honor, that I would like to reserve examination of this witness upon the model until I have had an opportunity to see the cross sections and also the map showing the lines of section, and it will very materially assist us in proceeding and perhaps materially shorten the examination
495 if those can be furnished to us during the afternoon so that we can look them over this evening. These sections we cannot get out of the model. Is that satisfactory, Mr. Gunn?

Mr. *DUNN*: Yes, I think we have them and we will be glad to show them to you.

Mr. GRAY: I would like to postpone the further examination of Mr. Frank until I have seen them.

Mr. GUNN: Can't you examine him on other matters?

Mr. GRAY: I don't think there is anything else particularly that I want to examine him on.

The COURT: Very well. The witness may be withdrawn, and may be recalled for further cross-examination.

Witness temporarily excused.

496 GEORGE A. KENNEDY, after being duly sworn as a witness for plaintiff, testified as follows:

Direct examination.

By Mr. GUNN:

Q. Where do you reside, Mr. Kennedy?

A. In Denver, Colorado.

Q. You are a mining engineer by profession?

A. Yes, sir.

Q. And are you a graduate of any school?

A. I am a graduate of the Colorado School of Mines in the year 1895, at which time I received the degree of Engineer of Mines.

Q. And what experience have you had in your profession since your graduation?

A. For possibly the first two years after leaving school I had an office, an engineering office in Colorado, in Rico and Silverton, after which I served in various capacities, from assayer to surveyor, to engineer to assistant to the manager for the Tiger Mining Company, the Iowa Gold Mining Company, of Silverton; after which
497 I served in various capacities in the mining profession for a portion of a year, and then was engaged for several years as the examining engineer for the Venture Corporation, and have been in the examination of mines as an independent engineer ever since that time, continuously.

Q. And over what section of the country has your experience taken you?

A. It has taken me over most of the western States, including South Dakota, Montana, Idaho, Colorado, New Mexico, Arizona, and in Canada, Alaska and Mexico.

Q. Are you acquainted with the property in controversy in this action?

A. I am.

Q. Have you made an examination of that property with a view to obtaining knowledge and information to enable you to testify as a witness in this case?

A. Yes, sir.

Q. And when did you first become acquainted with this property?

A. During February, March and a portion of April, in 1912, I made an examination of the Stewart mine for the purpose of
498 estimating the ore bodies then developed, at which time I sampled and measured the exposed ore bodies, and reported thereon.

Q. Do you recognize the workings in that property as they are depicted on Plaintiffs' Exhibit 1?

A. Yes, sir.

Q. And what part of the workings as shown on that map have come within your observation in the examination that you have made?

A. A portion of the workings depicted upon Plaintiff's Exhibit 1 have been done and platted since my examination last year. Those portions are—do you wish that I should point them out?

Q. I wish you would, yes.

A. The drift shown at this point, marked "Apex Drift" I believe has been driven, if not altogether, in part at least since that time. The raise connecting the old Stewart tunnel level, in the eastern end, marked "Raise No. 218 East", I believe has also been done since that time, as well as raise No. 314 east, and some of the work on the main tunnel level, notably the crosscut shown at this point, which has no designation, but runs from survey point No. 2100 to survey
499 point 2046, and the drift marked "Drift No. 415 West" from survey point 2046; also the working marked 400 north crosscut and 409 crosscut, have been run, and a short drift from survey point 2513 to 2537, and the raise therefrom, marked raise 415 east, and the short drift to the east from the top of that raise. In addition to that, the 200 foot level has been extended—I beg your pardon, it has not, but the 300 foot level has been extended a short distance beyond the face at that time, in the drift marked 305 west, I believe, and near survey point 2113, from that point to the present south westerly face. Also drift running southwesterly from what is called West 313 crosscut from near survey point 2567 to the present face. I believe that is all of the levels. In addition to that, raise No. 314 west has been carried through to the connection with the 200 foot levels, and raise No. 223 west has also been put through, and raise No. 228 west has been finished. I believe that is all.

Q. Have you made an examination of those workings which you have just detailed within the last few days, so as to determine what they disclose and enable you to testify regarding the same?

A. Yes, sir.

500 Q. Now, has the examination that you have made of this property extended to the workings in the westerly portion of the property or beyond the line drawn at right angles to the southerly line of the Senator Stewart Fraction claim at the top of raise marked Raise No. 2?

A. My examination of that ground was merely cursory. I was

not interested in that particular portion at the time and I did not do anything except to go through them and look at them casually.

Q. Have you visited the workings and ore bodies beneath the surface of the Ontario claim?

A. I have been to the connections made on the 300 foot level and the 200 foot level with the top of their stopes, but I have not gone down to their levels.

Q. From the examinations that you have made, have you been able to determine how many veins are disclosed in these workings easterly of the line drawn through the top of raise No. 2 west, to which I have just called your attention?

A. Yes, sir.

Q. State, if you will, please, how many veins are disclosed in those workings easterly of that line?

501 A. As I remember it, there were two veins disclosed in that portion of the property, one of which at the time I considered very minor and unimportant, and did not spend much time upon it; and that was shown in a drift at the north end of what is called No. 200 north crosscut. This drift extends easterly and westerly from that point; for a short distance from there there is what appears to be a vein. In addition to that I find in this portion of the ground a vein which is known as the Stewart vein.

Q. And on what vein are the ore bodies in the Ontario, if you have been able to determine?

A. The ore bodies as shown to exist in the Ontario from my observations in the stopes at the connections, are a continuation of and a part of the Stewart vein.

Q. And speaking with reference to the vein in the easterly portion of the Senator Stewart Fraction claim, state whether or not the ore bodies in the Ontario are a part of the same vein as the ore bodies found in that section of the Senator Stewart Fraction claim?

A. They are, yes, sir.

Q. How do you determine that?

A. By following the workings upon the Senator Stewart Fraction upon the Stewart vein and ore body along through various drifts and through the stopes, through raises, across the Senator Stewart claim and the Lazy Jean, we find the ore body continuous, that is, the merchantable ore body is continuous, with minor narrowings and faultings, directly into the ore bodies shown in the Ontario claim.

502

Q. Both the Frank and the Gray ore bodies?

A. Bothe of them, yes.

Q. State whether or not any part of the apex of this vein is to be found in the Senator Stewart Fraction claim, and if so, where is it located?

A. The apex of the Stewart vein has been disclosed in the Senator Stewart Fraction at various places from a short distance of the easterly end line of the Senator Stewart Fraction claim along nearly through the central portion of this claim to the westward, and slightly northward, thence westerly and southerly across the south side line of the Senator Stewart Fraction claim, and on still further.

Q. How did you d-termine that line that you have followed to be the apex of this ore body?

A. The workings and the stopes of the Stewart mine which have been opened in the process of extracting the ore have followed this ore until they have come to a point where it is the highest
503 point throughout, and they do not find any ore further; that is the limit of the ore.

Q. From the examination and observations you have made are you able to say whether or not the plane drawn through the apex of this vein as you have observed it in the ground is higher or lower than the plane of the ore bodies that are found in the Ontario ground?

A. What kind of plane, please?

Q. Well, at any point along the apex?

A. A horizontal plane?

Q. Yes.

A. Yes, at any point throughout this apex the vein takes a downward course in any direction and in a direction downward to the south and to the east, and is higher than the ore body shown in the Ontario.

Q. What, if any, structural difference is there in the vein as you find it disclosed along the line of this apex in the Senator Stewart Fraction claim and the vein as it is found in other parts of these workings?

A. The structural features of the vein vary slightly in different places of the ore body; some places they have been crushed and bretciated, and the structural features more or less destroyed
504 by the crushing, and these features are found at various places throughout. The general character of the ore body and the vein throughout along its apex is the same as found elsewhere throughout the ore body, and at the point in the stopes where the Stewart ore body or the Stewart levels go into the stopes of the Ontario.

Cross-examination.

By Mr. FOLSOM:

Q. Mr. Kennedy, what terminates the Stewart vein to the south?

A. I don't know that the Stewart vein is terminated to the south.

Q. Why do the workings stop?

A. At what point particularly?

Q. Well all along the workings all stop before they get to the south side line?

A. You mean here?

Q. Yes, at that end, against that fault?

A. Oh. On these various levels, as far as I know, the marketable ore or the ore that would pay to stope in the vein pinched down and there was no more ore there as far as I know.

505 Q. Is there a fault disclosed at that point?

A. As far as I know there is no fault here. I did not investigate to see that.

Q. I understand you to say that you have not been in the Ontario, but that you had simply gone to the top of the stopes?

A. Yes, that is correct.

Q. What is the general course of the north and south portion of the apex of the Stewart Vein as you have described it, that is to say, along the Clancy fault?

A. Why, the general course is a little bit east of north.

Q. Did you make an observation?

A. I would have to put a protractor on to tell you the exact course.

Q. Do you think that the observation that was made by Mr. Clancy the other day was correct, as far as you know?

A. As to the direction, yes, sir.

Q. What is the general course of the ore bodies in the Ontario which you observed in the stopes, the Frank and the Gray; you said you saw the top?

A. Yes. They were approximately in the same general direction as the apex depicted above here.

506 Q. And they dip, of course, at right angles to the course?

A. Yes, at right angles.

Q. What was the general course of the Osborn fault from the east end line to the point where the vein began to bend?

A. The general course is approximately north 65 to 70 west.

Q. What is the dip of the *of the* upper edge against the Osborn fault that you refer to and that you describe as the apex from the point marked W. prime on Exhibit No. 1, to the point where it crosses the east end line of the Stewart Fraction?

A. You mean the inclination?

Q. What is the inclination of the *3*dge?

A. Well, I am not able to give that off hand. I would have to get the difference in elevation of this drift down there and figure it for you.

Q. Would it take you long?

A. I don't think so. I would like to have that. (Witness figures).

Q. What is the figure?

507 A. The angle of inclination of the apex from the point in the apex drift marked "W" to the point on the 300 foot level marked "Drift 305 East" at its crossing with the easterly end line of the Senator Stewart Fraction is approximately 31 degrees.

Q. Is that the highest point that you recall, the point which you took above the apex drift?

A. Yes, that is near the surface, very close to it.

Q. What is the general direction of the dip of the portion of the vein, the north and south portion of the vein; you said that was southeasterly in the same direction as the ore in the Ontario?

A. The dip—no, I don't think I said that. The course——

Q. The inclination, I said?

A. The inclination, yes.

Q. What was the vertical distance between the point you took up there above the apex drift and the point beneath the east end line?

A. 356 feet.

Q. And what was the horizontal distance?
A. About 500 feet. That is only approximate, of course.
Q. Is that portion of the apex, the north and south por-
508 tion of the apex practically horizontal?
A. No, I think there is a slight inclination.
Q. In which direction?
A. In a southerly direction, if I remember correctly.
Q. Is the bending of the vein or the breaking of the vein in the vicinity of the Osborn fault due to that fault in your opinion?
A. It is my opinion that the strata adjacent to the so called Osborn fault was bent by the action of the Osborn fault in all probability.

Mr. FOLSOM: That is all.
Mr. DINES: That is all.

Witness excused.

509 WALTER G. SWART, called as a witness on behalf of the Plaintiff, being first duly sworn, testified as follows:

Direct examination.

By Mr. DINES:

Q. State your full name?
A. Walter G. Swart.
Q. Your residence?
A. Denver, Colorado.
Q. Your occupation?
A. Mining engineer.
Q. How long have you followed the occupation of mining engineer?
A. Between 22 and 23 years.
Q. Did you attend any technical schools preparatory for that purpose?
A. I did, yes, but I did not take my degree. You wish me to explain that?
Q. Yes, sir, if you please, where you went?
A. I studied it first with my father who was a civil engi-
510 neer; he was chief engineer of the New York State Lines of the Lehigh Valley Railroad; I was running a transit when I was sixteen years old. I did my high school work in two years and a half, and I went to Cornell University and attempted to keep up the same pace and my health failed and I had to go to Colorado. After two years in the open I went back into the Denver University. There I took practically all the mathematics that would have given me my degree but I was deficient in some of the other work, so I have had something more than my junior year.
Q. And since that time where have you followed your profession?
A. Do you want me to go into detail on that?
Q. Yes, sir, in a general way tell where you were residing, what companies you have been connected with and what ones you are connected with now?

A. I went from the Denver University to the Arkansas Valley Smelting Company in Leadville. From that I went into mining work for Mr. August R. Meyer who was at that time the head of the Arkansas Valley Smelting Company. Later I went to Aspen, Colorado, and later to Cripple Creek and to the San Juan
511 country, being associated with various mining companies in various capacities, from manager down. I was associated with Mr. Robert M. Thompson of the International Nickel Company, doing mining work, and for the last several years I have been western manager and consulting engineer for the American Zinc, Lead & Smelting Company, one of the largest concerns in the production of zinc and lead in the United States, with headquarters at Boston. My headquarters are in Denver.

Q. What states and territories and in what mining communities or districts have your duties led you into?

A. I have made mine examinations in all of the western states and also in the states through the Mississippi Valley in some of the Eastern states, Tennessee for example. I have conducted mining operations in most of the Western states.

Q. Has your seven years' connection with the company that you are now with led you particularly to investigate lead and zinc deposits?

A. Yes, sir.

Q. Does your company do business up in this western country, through the Northwest, in Idaho, the Wardner district?
512 A. Yes, sir.

Q. In that connection did you make any examination of the workings of the Stewart Mining Company indicated on Exhibit No. 1 of the plaintiff?

A. I did.

Q. When did you first examine that property?

A. In March of 1912.

Q. To what extent did you examine it at that time?

A. We examined the lower workings rather carefully, the upper workings being pretty well exhausted of their marketable ore were not considered of so much importance and we gave very little attention to them.

Q. Now, since that time, have you made any examination for the purpose of preparing yourself to give evidence in this case?

A. Yes, sir.

Q. Now, what was the extent of that examination that you made?

A. I went through the workings which had been made since I was here in March, both the workings in the lower levels for the further exploration, development and extraction of ore, and
513 the workings which had been run to show the apex of this ore body and this vein.

Q. Did you examine the different portions of the vein on this last occasion including the upper termination of the vein at its highest point in the lines of the Senator Stewart Fraction claim?

A. Yes, sir.

Q. Now, please in detail give to the court the examination that you made as you made it, what you found and the conclusions that

you came to and the reason for those conclusions, using any of these exhibits that are in evidence, and call attention, please, to the particular exhibit?

A. On exhibit 1, we went first into the crosscut leading to what is known as the Apex drift. We examined the west drift which is marked here "W-2," and which shows the top of what is known as the Stewart vein and also shows what is known as the Clancy fault. We went into the east apex drift which is here marked "W-1" or "W-prime," there finding what is known as the Osborne fault, also the top of what is called the Stewart vein. Coming then back to the raise which is here marked raise 4 east we went down
514 through the raise to the tunnel level the old Stewart tunnel level. Crossing around and through the old stopes we next went through east No. 3 cross-cut to the east end of drift 5 east at a point where it is approximately cut by the line representing the cross section No. 5. Here the Osborne fault is again in evidence, also the Stewart vein, coming against the fault. Continuing, we next went down raise marked 218 E. passed the 100 level, which is shown at this point by old stopes and the remains of the track which was in the level. Reaching eventually the 200 foot level near the point where it is intersected by the plane marked by the cross section lines VI-VI. Continuing then eastwardly along the 200 foot level to the top of raise 314 E. and down that raise to the 300 level. The portion of the 200 level east of raise 218 E. is partly upon the fault and partly upon the vein. The same is true of raise 314 E. Raise 314 E. near its bottom comes into the top of the stopes which were above the 300 level. Going easterly in those stopes we come to the end of this level where the Osborne fault and the Stewart vein—the Osborne fault is disclosed. Coming back southwesterly along the 300 level we went down raise 410 E. to the 400 level or fir
515 tunnel level. Practically all of this distance with a few minor exceptions is in the Stewart vein.

Q. Did you examine at this time the ore bodies in the Ontario lode mining claims in dispute here?

A. Yes, sir. I say "yes sir," we went simply over the backs of the stopes in order to determine the continuity of the ore from one claim into the other.

Q. What conclusion did you come to as to the continuity of the ore from the Stewart vein into the Ontario?

A. That it was continuous, that it was in the same vein, that it was the same ore body.

Q. What character of a vein is the Stewart vein.

A. I should say it was a replacement vein.

Q. Do replacement veins usually have well defined parallel walls and regular dip or walls running at various angles and not parallel to each other in dip?

A. Well, as a rule replacement veins will be irregular. It is quite apt to be the case that one wall is more sharply defined than the other.

Q. And how is the deposition made of the ores in replacement veins? Are you familiar with that branch?

A. Why, I naturally had a good deal to do with it;
516 I don't know that I understand exactly your question, however.

Q. Well, is there any reaction involved in the action of the ores in what are known as replacement veins that is dissimilar from the method of the deposition of the ores in ordinary fissure veins?

A. I cannot say that there is, that there is any chemical difference as to the action of the chemical solutions.

Q. What do you mean by replacement?

A. I mean that a portion of the rock material which has been most readily soluble in the solutions carrying the mineral has been dissolved and has been replaced by the mineral which the solution originally carried.

Q. Does it usually require any greater length of time for the reaction to take place involved in the taking up of the matter that is afterward replaced with mineral in solution in getting ready for the replacement than in the ordinary reaction involved in the formation of ores in fissure veins?

A. I do not know that I can answer that Yes or No. I do not know that any one could answer that, the prime element
517 with regard to any chemical reaction under such circumstances.

Q. In the Stewart vein do you find a regular dip to the vein or a dip that varies?

A. A dip that varies.

Q. At different portions?

A. It varies in different portions.

Q. In what portions of the mine did you find the greatest variation in the dip of the vein?

A. The area which lies between the east No. 3 crosscut, the drift 5 west, the drift 5 east, and the drift 4 west in its northeasterly portion has a dip that is very flat, has no dip at all perhaps, lies flat; the vein in some cases has a reverse dip. As against that there are places in the mine where the dip will rise forty-five degrees and perhaps steeper.

Q. Were you able to discover in the ground evidences of the cause of those changes in dip?

A. Yes, sir; I think it would be fair to say we did.

Q. What did you find there that would account for those changes?

A. One cause would be what is known as the Osborne
518 fault.

Q. What is the strike of the Osborne fault?

A. Approximately north 75 west.

Q. In what way does the apex or top of the vein in the Senator Stewart Fraction come against this fault; is it above the fault or under it?

A. It is above it.

Q. Where did you find the Clancy fault disclosed?

A. In the point in the apex drift marked "W-2," at the top of raise 2 W, which is marked "W."

Q. On Exhibit 1?

A. On Exhibit 1, yes, all of this is on Exhibit 1; and at the top of raise No. 7.

Q. Did you see at any point where the Stewart vein on its upward course from the lower workings came in contact with or lay against the Clancy fault?

A. Yes, sir; in those three places I have just named.

Q. Is that the apex one of the points of apex that you have already named as the apex here?

A. It is.

Q. Does that lie under or above the fault?

519 A. Under the fault.

Q. Are there any workings there that would indicate whether or not upon the other side of the fault any vein can be traced that can be identified as the Stewart vein?

A. I am not at all familiar with the workings which lie to the west of the Clancy fault; We were not interested in those during our examination. We were told that the workings were more or less inaccessible at the present time so we did not go up there.

Q. For the purpose of illustration, I would ask you to examine these small blue lines in the model here, the smaller blue lines in the model that is designated Exhibit 15, and state whether or not as to that particular feature of the model it serves to illustrate the way the Stewart vein at the points where it lies under the Clancy fault comes in contact with it?

A. Yes, sir, I should say roughly that it does.

Q. Did you see any evidence of it going beyond it?

A. Not at those three places, no, sir.

Q. How did the Clancy fault look; what do you mean by the Clancy fault; describe it to us if you please.

520 A. The Clancy fault as disclosed in those three places is perhaps better described as a brecciated zone than as a fault plane. That is to say, there is a considerable area of the country rock which has been shattered and broken and the distinct line of movement of the fault is not so well developed. It is perhaps a little difficult to put your pick upon it at any given point and say, "here was the last plane of movement."

Q. What causes the brecciation that you have named, the grinding of the particles of material?

A. In all probability the movement of one side of the fault upon the other.

Q. Is that a movement that is accomplished by a sudden movement and extending over a great extent in faults, or is it one extending over a long period of time?

A. In all probability over a very long period with a very gradual movement, perhaps intermittent.

Q. After this breccia is formed by the grinding together of the fault action, what effect does it have upon the solutions from which the deposition of ore is made?

521 A. I do not know that I can say—I do not know that I can tell you positively that it would have one effect or the other. In some cases the brecciation, the crushing of the

rock into small fragments furnishes a channel or channels for the solutions and it is only in such regions that you find ore deposit. Again, in other parts of the country, in other mines, you will find that the brecciated zone apparently gave too free a channel for the solutions and they went through perhaps too fast, having too much of a channel without enough of a damming back, and that no deposition took place.

Q. You speak of damming back. Does a mass of finely ground material compactly put together there by compressive forces act as a dam to a solution.

A. It may do so, yes.

Mr. GRAY: I object; I do not see what this has got to do with the issues of this case.

Mr. DINES: It may have a great deal to do with it; that is a question.

The COURT: The objection will be overruled.

Mr. DINES:

Q. Where you found the Clancy fault and this vein running against it, did you find a condition of finely ground material there opposing the passage, that would have the effect of opposing
522 a passage, so far as you could determine it, of any solutions that would carry mineral beyond it?

A. There is a gouge there; whether it continues and whether it would form a dam or not, I could not say.

Q. It is difficult to determine after these number of years?

A. It is, yes, sir.

Q. Was the vein as it lay against the Clancy fault well defined or broken?

A. A few feet below the Clancy fault are the old stopes where the vein was very clearly defined. As I said a few moments ago the very top of the vein is in a faulted region, a faulted zone, and it is difficult to determine where the vein stops and the fault begins.

Q. Was there any other similarity between the character of the vein as it lay against the Clancy fault and the character of the vein as it lay against the Osborne fault?

A. No, they are dissimilar.

Q. Where did you find from the observations you made the line of apex within this claim?

A. Referring to Plaintiff's Exhibit 3, this represents as
523 nearly as I personally can determine from my own investigations the apex of this vein.

Q. Do you think the development was sufficient there to enable you to project the apex in that form within the boundaries of the claim?

A. The portion of the apex beginning at the southeast end line of the Senator Stewart Fraction to the point in the apex drift at the top of the bend where the red line makes the large bend, is very well developed. This portion from the top of the arch as represented here to the south side line of the Senator Stewart Fraction, while it has been well developed, I could see the vein in but two places—the

top of the vein or the fault—one here at the south side line of the Senator Stewart Fraction, and the other in the apex drift.

Q. Now, are there more points of actually developed, I mean physically developed points of apex in the northerly-southerly portion of the vein, or in the easterly-westerly portion?

A. The points that I could see that are accessible show more in the section from the top of the large bend to the southeast end line of the Senator Stewart Fraction.

Q. What data do you use when you have certain apex
524 points that are actually opened up covering a claimed line of apex, what other data do you use in determining the intermediate points?

A. You mean in this particular case?

Q. Yes, sir, in this particular case?

A. My understanding is that the points that were used in determining this apex here were the top of the apex drift, the top of No. 2 raise, and the intermediate stoping points between.

Q. Yes; and how is it in the other portion of the apex running easterly and westerly?

A. The other portion of the apex of the vein running from the top of the bend to the southeast end line of the Senator Stewart Fraction is developed with a fair degree of continuity.

Q. Please state to the court in going from the points of apex as outlined within the boundaries of the Senator Stewart Fraction claim what course you pursue in going to the ore bodies in the body of the Stewart workings and the ore bodies in the Ontario?

A. Do I understand that you want me to start——

Q. No, just say what course?

525 A. What course?

Q. Yes, sir.

A. A downwardly course.

Q. Do the ore bodies in the Ontario lie between vertical planes projected in one instance through the easterly end line of the Senator Stewart Fraction and in the other instance through a plane parallel to the end line vertical plane projected through the points where the apex in its southerly point crosses the south side line of the Senator Stewart Fraction claim?

A. Having seen only the backs of two of the stopes of the Ontario ore bodies, I cannot of my own knowledge, answer that question

Q. Well, but from the exhibits?

A. From the exhibits, yes, sir.

Mr. DINES: That is all.

Cross examination.

By Mr. GRAY:

Q. Mr. Swart, did you examine the so-called apex of the vein in the Clancy fault on southerly across the Senator Stewart
526 claim?

A. Except in those three places that I named I did not see it.

Q. What three were they?
A. The apex drift, the top of raise 2 W. and the top of raise 7, I think that is No. 7 raise.
Q. No. 7 raise?
A. Yes, No. 7 raise comes up here from this No. 4 lateral and then turns and comes up here.
Q. The vein is continuing on its course southerly at the last point at which you do find the vein in the old lower Stewart tunnel, is it?
A. Yes, sir, I think so, southwesterly.
Q. Yes, sir; and you have followed that vein from the Deering crosscut along the Stewart tunnel level?
A. No, sir; that is not possible. Those are the old stopes through there, and they are not now accessible; you have to go around.
Q. It is closed up, is it, so that you cannot get through the Stewart tunnel level?
A. It is closed up so you cannot get through the Stewart tunnel level, yes, sir.
Q. Between the Deering crosscut and the southern workings? You say that the Clancy fault has not a well defined gouge?
527 A. No, I do not think I said that.
Q. What did you mean?
A. I said that the Clancy fault shows a more broken condition or shows a broken condition of the rocks on either side of it, a very broken, shattered condition.
Q. Of the rocks on either side of it?
A. Yes, sir.
Q. On the eastern side of it for how far; in other words, below the line of the fault?
A. I think I have already testified that it is rather difficult to determine exactly where the line of that is.
Q. Well, you saw this well defined gouge, did you not?
A. I saw a gouge in several places.
Q. Wherever you saw the fault you saw it, didn't you?
A. I saw it outside of a single plane; there is more than one plane of movement there.
Q. Well, tell me now where did you see it?
A. I saw it in the top of this crosscut here—this raise No. 7; I saw it in the top of raise 2 W.
Q. In other words, wherever you saw what you call the
528 Clancy fault you saw this well defined seam of gouge?
A. No, I think not, not a single seam.
Q. Isn't it a fact, that that fault is as well defined—shows as well defined a seam of talc and gouge as any fault that you observed in and about that property?
A. I should say no.
Q. What was the extent of the crushed and broken condition at the Clancy fault so far as your observations went?
A. I should say fifteen feet.
Q. Fifteen feet in width?
A. Yes, sir.
Q. That would be at right angles to the——

A. That would be at right angles to the fault plane.

Q. To the fault plane. Did you follow that Clancy fault to the north from the Deering crosscut; I mean north of the Deering crosscut any place?

A. No, sir.

Q. Was it disclosed in any of the workings that you call the apex here?

A. Yes, sir; the Clancy fault is disclosed in the west end
529 or west drift or the west end of the apex drift.

Q. Yes, sir. And where does it terminate?

A. I cannot say that to a certainty. There is close to this entering the tunnel here an arch which may perhaps be the top of that fault, but that country is close to the surface and it is rather difficult to say on a short examination whether that is the top or not.

Q. Do you find it is older or younger than the Osborne fault?

A. I do not know.

Q. You do not pretend to testify here——

A. I do not pretend to testify to that, no, sir.

Q. And you have nothing upon which you could base an opinion?

A. No, sir.

Q. In all of your investigations or examination of the property?

A. I have not.

Q. You do not desire to be understood as testifying——

A. No, sir.

Q. That it is older than the Osborne fault, do you?

A. I do not know.

530 Q. You do not intend to be understood as testifying that it is older than what you call the Stewart vein?

A. No, sir.

Q. And on that you have no opinion?

A. I could not have an opinion without making a careful study of it.

Q. That is a normal fault so far as your investigation went?

A. So far as I know, I have no knowledge of that.

Q. Well, but that would be your opinion from what you saw?

A. Yes, sir; I would think so.

Q. What you have referred to here as the apex, from what you call the apex drift to the east end line of the Senator Stewart Fraction line, is simply the termination of the vein against the Osborne fault?

A. Yes, sir.

Q. Is it your judgment that that fault has affected the vein for some distance in a southerly direction from the fault?

A. Yes, sir.

Q. For how far in your judgment?

531 A. I think that is an irregular distance; in some places it might be a few feet, and in some places it might be several hundred.

Q. Are you able to show me where in your judgment it was several hundred feet?

A. I think, for instance, here on section five, plaintiff's exhibit 9, there is a turning there of at least 200 feet.

Q. And you think the vein was affected for two hundred feet from the line of the fault there, do you?

A. I presume so, yes, sir.

Q. I just wanted your judgment. Where was it that it was only affected a few feet?

A. I do not know that I can tell you directly, but it is—I do not know, I do not think I could tell you without my notes.

Q. Well, have you got them?

A. I have not them with me.

Q. Didn't you bring your notebook up with you?

A. I did not.

Mr. DINES: Mr. Swart did not know he was to be introduced this afternoon.

532 Mr. GRAY: All right.

Q. Now, after you leave the influence of that fault, what is the course of the Stewart vein?

A. Generally it has a southwesterly course.

Q. South what, south thirty?

A. Yes, sir, south thirty west.

Q. The direction of the dip would then be south sixty east?

A. South sixty east.

Q. You find after you leave the influence of the fault that the vein has a fairly uniform dip, has it?

A. No, sir; it has an irregular dip.

Q. It has an irregular dip; after you leave the influence of that fault, however, you find that its general — is approximately north thirty east?

A. Yes, sir.

533 Q. After you get away from the influence of the fault, while the angle of the dip varies, the direction of the dip is approximately the same, the course of the vein being approximately north 30 east, isn't that true?

A. Yes, I think that would have to be necessarily true, theoretically.

Q. Now you have observed this fault that is referred to as the No. 11 fault?

A. Yes.

Q. That also is a normal fault?

A. I don't think it can be called a normal fault; it is what is known as a twist or rotary fault or a tear; there are a great many different names for it, none of them entirely satisfactory.

Q. What is the inclination and direction of that fault?

A. It varies from 30 to 36 degrees, the dip being to the southwest, I should say, slightly; I have forgotten exactly about that, but my recollection is that the dip varies from 30 to 36 degrees, and the dip is slightly to the west of south. That may not be quite correct. It is in a southerly direction, however.

Q. The hanging wall went down along that fault, didn't it?

534 A. Yes, I think it did.

Q. Then it is a normal fault, isn't it?

A. Yes, No. 11, if the hanging wall went down it, would be a normal fault.

Q. Look at the section, Mr. Swart; if it is a normal fault explain why it is upon this section that it has been given the appearance of bending downward on top of the fault?

A. I could not tell you.

Q. Tell the tunnel level of the Senator Stewart; how far do you find from the Osborn fault that that vein has been affected on its course by the local influence of the fault?

A. Approximately 100 feet, perhaps more. I cannot answer that because I do not know whether this drift is on the vein or not.

Q. By this drift you mean what?

A. The old drift No. 4 east. I don't know whether the drift No. 4 east is against the wall of the vein or not.

Q. It has been testified here that it was all in the vein. There it is.

A. Yes, that would show an influence; that is more a matter of opinion. I have no data except what I see before me on this

535 map. If you want my opinion on that, I can tell you, that is all. That would be perhaps 100 or 150 feet.

Q. From where?

A. From here to here.

Q. From the Deering Crosscut to what point?

A. From a point 25 feet south of the Deering Crosscut to a point near survey point 2090. According to this I would have to modify that considerably, because I would have to include all of this entire distance from point 2090 to point 2549, I think the figure is.

Q. You understand that is a broken line and does not represent it accurately?

A. I understand it does not represent it accurately.

Redirect examination.

By Mr. DINES:

Q. You were asked about the dip of this vein at different places, and I don't know whether the words "true dip" was used, or regular dip or something of that kind?

Mr. GRAY: No, it was not.

Mr. DINES: What was your word?

Mr. GRAY: Dip.

536 Q. Well, he used another word. Do you recollect what that word was?

Q. I have forgotten the exact language and I cannot quote it. Did you refer in your answer to the question regarding the dip to what is known as the true dip, generally at right angles to the strike?

A. I cannot remember just what the connection was.

Q. What do you mean by the dip when you speak of the dip of a vein; how do you usually take it?

A. A line at right angles to the strike at any given point.

Q. Now, you take a line at right angles to the strike at any given point of this vein; please state to the court whether or not that would represent a continuous and general dip throughout the vein as it goes downward into the earth?

A. It would not.

Q. Why not?

A. Because the only case under which that could be true would be that the vein were itself a plane. If the vein becomes a curved surface in any way, then the dip constantly changes from point to point.

537 Q. Then when you measure a dip of a constantly changing vein or a vein that is irregular in dip, you do not think that that is a fair dip to take its local dip taken at that particular place as a representative of the general dip of the vein throughout its course from apex to bottom?

A. It is not.

Recross-examination.

By Mr. GRAY:

Q. In other words, you think that in determining the course or the dip of a vein you should cast aside local dips and local courses and take the general course of your vein?

A. I don't see how, in a curved vein, it is possible to state the dip of the vein in positive terms, because it varies from point to point.

Q. You can state the onward course of the vein, can't you, or the downward course?

A. Yes, you can state the downward course.

Q. And in giving the dip of a vein or the course of a vein it is not proper to take some local course that you find, or some local dip, is it?

538 A. No, sir.

Redirect examination.

By Mr. DINES:

Q. Now, in reference to the downward course, what do you mean by the downward course of a vein from its apex; give us your definition of that; what do you mean by downward course?

A. Starting at the apex of the vein at any given point and moving from that point downward at right angles to the course of the vein where you start.

Q. Suppose that you move from your point of the apex on a plane parallel to the plane of your end lines in this case, would that be a downward course?

A. It would.

Mr. GRAY: I object to cross examination of his own witness.

The COURT: I think it is improper. I will allow the answer to stand, however.

Mr. DINES: Very well, your honor.

Witness excused.

Whereupon further hearing was adjourned until January 10th, at 10 A. M.

539 FRIDAY, *January 10th*, 1913—10 a. m.

ALFRED FRANK, recalled on behalf of plaintiff, testified as follows:

Mr. GUNN: I'll state to counsel that I have another question or two to ask of Mr. Frank.

The COURT: Very well.

Direct examination (resumed).

By Mr. GUNN:

Photograph marked Plaintiff's Exhibit No. 16, for identification.

Q. Mr. Frank, I call your attention here to a photograph marked Plaintiff's Exhibit 16, and ask you by whom that photograph was taken?

A. This photograph was taken by me.

Q. And if that photograph is a picture or purports to be a picture of any part of the vein involved in this controversy, you may state where the photograph was taken and what it purports to picture?

A. Referring to the plan map, Plaintiff's Exhibit 1, on
540 the working which is known as the old lower tunnel level, this photograph represents a condition, and was taken of a condition or exposure existing at a point five feet easterly from survey point 2512. May I put a mark on there?

Q. Mark it, yes. Now, how have you designated the point on the map?

A. I have designated it by an arrow head at a point about five feet easterly from survey point 2512. The camera was pointing in a direction looking north 60 west. As nearly as possible to get it, I endeavored to place the camera in a position pointing directly along the strike of the Osborn fault at that point, but because of the numbers and the impossibility of getting a good focus, were I to have moved the camera more nearly in that direction, I could not quite get it in the correct position there, in as much as the Osborne fault has at that point a course as observed by me of north 70 to 75 west, whereas the angle along which this picture was taken was about north 60 west.

Q. State whether or not that picture is a correct representation of the conditions as you have observed them in the ground?

A. This picture is a correct representation and reproduc-
541 tion of the conditions as they exist in the ground, and it illustrates the top of the ore body in the position that it occupies on the Osborne fault. The same material, of course extends higher than the top of this photograph, but the top of this photograph is practically at the top of the high grade ore.

Mr. GUNN: We offer the picture in evidence.

Photograph admitted in evidence as Plaintiff's Exhibit No. 16, without objection.

Q. Will you mark on this photograph the top, showing the direction towards the apex of the vein?

A. Yes, sir. (Witness marked the top of the picture "Top" in red pencil.)

Q. If you can, by reference to the cross section designated as Plaintiff's Exhibit 9, explain more clearly where this picture was taken and what it represents, you may do so?

A. This photograph was taken at a point about 20 feet westerly from the plane of cross section V, being Plaintiff's Exhibit 9, and represents an exposure on a plane that is practically, if not
542 absolutely parallel to the plane of the cross section represented and depicted on this Plaintiff's Exhibit 9.

Q. Now, if the Osborne fault is disclosed on that photograph, you may point out to the court, if you will, the Osborne fault as distinguished from the vein, and mark it on the photograph?

Mr. GRAY: Mark the fault in blue and the vein in red.

A. The lighter colored material shown by the photograph to the right hand side and bounded by the inclined line marking the contrast between the light and dark material, represents the Osborne fault; in fact, all of the lighter material photographed on the right hand side of the picture is material and gouge of the Osborne fault. To the left of the line marked Osborne fault the vein appears which at this point consisted of very high grade galena ore. The higher grade or better quality of the ore is distinctly shown by the very dark portions of the photograph. Above that and in the extreme upper left hand corner of the photograph is also shown a part of the vein, but not necessarily high grade ore.

Q. Can you give us approximately the angle of declination of the vein as shown on that photograph?

543 A. The hanging wall of the high grade ore streak as shown on this photograph has a dip of about 42 degrees. The dip of the footwall portion of the ore streak of course corresponds with the dip of the fault, and it is shown on this photograph to be about 65 degrees at this point. I might add that at the time this photograph was taken I carefully leveled the camera with a spirit level, so that the angles shown thereon are really about correct.

Q. And how have you designated the vein as shown on that photograph, by what marking?

A. I have marked the vein in red.

Cross-examination.

By Mr. GRAY:

Q. Mr. Frank, what do you call what you have termed the apex of the vein on this line running from the point up in the apex tunnel east to the end line of the Senator Stewart Fraction claim?

A. I call the topmost portion of the vein the apex.

Q. That is the termination of the vein against the Osborne fault?

A. It is the termination of the vein on the Osborne fault
544 and in part against it, yes, sir.

Q. How long was this pick handle that you have nailed against the Osborne fault?

A. Why, I should say probably sixteen inches.

Q. What is the vertical distance between the top of that portion of the ground *is* shown and the bottom thereof on this photograph?

A. Assuming that the pick handle is approximately 16 inches long, I should say that that represents a height of between four and five feet.

Q. And what width does it represent on the top?

A. About the same.

Q. And at the bottom, as far as can be seen?

A. About the same. That black shadow shown at the bottom I think is caused by the shadow of the flash that was used in taking the photograph.

Q. What is the length of the exposure along the lone of the Osborne fault, as shown in that photograph?

A. Without having exact data to base the measurements on, but assuming that the pick handle is about 16 inches, I should say that the line of the intersection or demarcation between the vein and the fault as shown in that picture is a trifle over four feet.

545 Q. I understood Mr. Gunn to ask you what the angle of onclination of the vein was as shown on that photograph; is that your understanding?

A. Yes, sir.

Q. What is the angle of inclination of the vein as it comes against the Osborne fault?

A. About 65 degrees; that is, the footwall of the ore or vein at that point, and the hanging wall of the Osborne fault.

Q. It is along the line where the vein comes against the Osborne fault?

A. Yes, sir.

Q. Will you get the plant of the Stewart tunnel level, exhibit 10, and just indicate to the court on that plan the exact point where you took this picture?

A. I will say that at that point shown about five feet easterly from survey station 2512 the side of the drift was timbered part way up toward the top of the drift. In order to get the photograph we tore out some of the lagging, and that allowed the filling behind the lagging, and so on, to slough off for a distance of about four or five feet, in fact, the actual distance shown in the photograph, back of the timber, so that the position which that photograph
546 would occupy on this map—that is, the exposure shown—would be outside of the working as actually outlined on this map, and if I may draw it thereon, it would represent a sort of excavation made in that direction.

Q. Please mark that with an arrow, the point five feet east of that survey station, on Plaintiff's Exhibit 10, and you may put

your name on it if you want to; mark it "Point where photograph was taken."

A. Very well.

Q. How did the ore lay at that point; what was the inclination of the ore seam?

A. The upper part of the ore seam, that is the hanging wall portion of the ore seam lay at an inclination of about 42 degrees, 42 to 45.

547 Q. It was exposed only toward this lagging, out?

A. No, in speaking of the ore seam there I am referring to the high grade ore seam, that which is distinctly marked on that photograph.

Q. How was your vein then laying at that point; was it flat or what?

A. It was laying at an inclination of about forty-two to forty-five degrees.

Q. And that is the general inclination of the vein at all points thereabouts, is it?

A. No, I would not say that it is the general inclination of the vein at all points thereabouts. There is another exposure of that same high grade ore streak in the small projection or crosscut extending out about five feet from the drift just a short distance westerly from the point 2512.

Q. Yes, sir; will you mark it, if you please, so that we can know what this is?

A. How will I mark it?

Q. Any way you want to. I do not care; mark it "F," on exhibit No. 10.

A. At that point the same ore streak has a dip of forty

548 degrees.

Q. Of forty-degrees at that point. Just mark that also on this exhibit No. 1, that "F" where the vein has a dip of forty degrees.

A. I did not say that the vein had a dip of forty degrees.

Q. Well, what dip has the vein there?

A. The actual boundaries or limits of the vein are not exposed in that particular working there, but that would probably represent a fair average dip.

Q. In that working?

A. In that vicinity.

The COURT: That is the dip of this high grade ore at that point?

A. Yes, sir; that is the only thing which can be accurately measured at that point.

Mr. GRAY: And it dips in what direction in that little projection that you have marked "F"?

A. The dip taken there I should say is about south twenty west. The ore streak at that point lies very nearly, if not quite, parallel to the course of the Osborne fault. It is only at a very slight angle therefrom.

549 Q. In making this model which you have cut on the bias and the section of which you have run at an angle of south nine degrees west—am I correct in giving the course?

Mr. DINES: We object to the use of the term "on the bias" because that is unexplained and no witness has testified to it. We would like to have the facts instead of the comments of counsel in his questions.

Mr. GRAY: It is very evident that that is exactly what it is Mr. Dines.

Mr. DINES: Let us show it. What I object to are the comments of counsel.

Mr. GRAY: I am not commenting.

The COURT: Well, the objection will be overruled.

Mr. DINES: Exception.

Mr. GRAY:

Q. Make it an angle of south 9 degrees west. That is the correct angle, isn't it?

A. That is approximately the angle of direction of the plane of section represented by the sheets of glass in this model.

Q. That is what I mean, yes, sir. Will you explain to the court again why you took that course?

550 A. That course was taken as being one very nearly, if not quite normal or at right angles to the direction of the Osborne fault as shown on the 400 level or fir tunnel level and also as shown where the Osborne fault intersects or is intersected by the top or apex of the vein. It really would make very little difference in so far as the general vision given by this model is concerned whether these planes shift a trifle one way or another.

Q. In other words, it would make very little difference if a cross section were taken diagonally through the stopes this way or along the course of the stopes so far as the effect on the eye is concerned?

A. So far as the effect where a great number of sections are combined is concerned it makes absolutely no difference. By means of a series of connected sections such as are contained within this model there is developed a surface or contour which in this case is a very much warped and irregular surface, being the surface of that vein. Now, did we have a section in any direction, each one of them representing the plane upon which they cut that surface, the combination of the entire dip would give the same results.

551 Q. Now, if there is anything else you want to say in defense of it do it now.

A. I am not giving a defense of it.

Mr. DINES: We object to that manner of counsel; we do not think it is proper for him to assume that attitude.

The COURT: Yes, sir; I do not think that is proper.

Mr. GRAY:

Q. Will you explain to the court why it is that every exhibit which you have produced in court here has been upon the scale of thirty feet to the inch until you have produced this exhibit?

A. Yes, sir, I can explain good.

Q. And this is upon forty feet to the inch?

A. The explanation of that is that the working map of the Stewart Mining Company, the map which is in constant use and the maps and prints which are made therefrom and which are in constant use, are on a forty scale. This model was started before any map which was drawn on the—on a thirty scale was made. These maps drawn on a thirty scale are shown larger for the only purpose of having a better map or representation to look at from a distance, and the scale of the model was not in anyway intentionally
552 different from that of the map here.

Q. This model that you produced and the sections which you have presented as a portion of the model are accurate, are they?

A. I believe I stated yesterday that they were accurate insofar as it was possible for me to say so; yes, sir.

Q. The representation of the vein painted in red within the model is accurate?

A. Yes, sir.

Q. It gives the accurate outline of the vein as developed?

A. It gives the accurate outline of the vein as developed and also as shown on other maps and cross sections here in evidence.

Q. It gives the correct representation of the termination of the vein against the Osborne fault?

A. I believe it does.

Q. From the observations which you have been able to make thereof?

A. Yes, sir.

Q. Will you give me the eighth cross section in that model. I note the glass on top is frosted glass. Is that so that you can
553 clearly see the outlines of the planes on the surface?

A. The object of that was so that a light put at the top would give a diffused light. There is a very peculiar effect here when an electric light is used in illuminating this model; it shows the reflection of a lamp on each sheet; it is very confusing, whereas, on the other hand, if you put a light through the ground glass it gives a diffused light which does not confuse in any way. Is this what you want (referring to glass sheet taken from model)?

Q. The scale, I understand is thirty feet to the inch?

A. It is forty.

Q. Or forty feet to the inch?

A. Yes, sir.

Q. The uppermost working shown on the section which is the eighth from the eastern end of this model is the one which you have presented here to the court, is it not?

A. Yes, sir.

Q. What is the highest working shown on the vein on that section?

554 A. It is what is known as the lower Stewart tunnel level.

Q. Just point that out to the court, will you. For what distance along the sourse of the Osborne fault and above that level

have you projected the vein thereon? Along the course of the fault, Mr. Frank, please?

A. About fifty-five feet—sixty feet.

Q. What opening is there in that area which permits you or justifies you in projecting that vein upward for that distance?

A. There is no opening on the immediate plane of this section at that height, but there is an opening showing a greater width of vein that is now accessible, and it might be a matter of interest to mention that this passes right about through the point we were discussing a short time ago.

Q. That is, in through that little projection "F" from the Stewart tunnel level?

A. Yes, sir.

Q. Where you say the vein has what inclination?

A. I did not say the vein. I said the high grade ore streak there could be shown to be accurately—accurately measured—to
555 have a dip of about forty to forty-two degrees.

Q. What did you say the dip of the vein was?

A. I thought that the vein had about the same dip.

Q. But you have painted the vein on here as though it rose there from that little projection at an angle of what?

A. Not at all. The vein is not painted there as though it rose from that projection. That projection would appear on this cross section right about there.

Q. Between the two openings on the Stewart Tunnel level?

A. Yes.

Q. And have you taken that opening into consideration and the exposure of the vein in there in determining whether you should paint it on this?

A. To the south of that little opening there is another drift shown.

Q. Whereabouts, Mr. Frank?

A. The drift marked as drift 5 E.

Mr. DINES: To what exhibit did you refer, please?

Mr. GRAY: On No. 1, on all of them. It is marked just
556 the same.

A. Both on No. 1 and No. 10, it is marked the same.

Q. Wherever it is shown. And you have no opening, however, above the Stewart tunnel level above which you have projected that vein and painted it along the line of the fault for sixty feet.

A. There is no opening on the plane of this section. That the vein does go up beyond that, we are quite sure from other workings.

Q. What other workings?

A. Both to the east and west of that point; probably more particularly to the west.

Q. Give me where it is to the east of it.

A. I say more particularly to the west of it.

Q. All right; which ones to the west?

A. These stopes right here, for instance.

Q. Just those three stopes above the drift 5 E.

A. Those stopes are only about twenty-five or thirty feet westerly from the plane of this section.

Q. What is the course of those stopes?
A. About north 74 east.
Q. What is the dip of the vein in those stopes, Mr. Frank?
557 A. In those particular stopes it is quite flat, it is flatter even than the degree which I mentioned, that of forty degrees.
Q. Yes, sir. By being flat, what do you mean; how flat?
A. I should guess it measured there about—it is not a guess, it is my recollection, at that point there about between thirty and thirty-five degrees.
Q. How does that give you the justification for painting this vein running away up along the Osborne fault for sixty feet, if you find that opposite it in the workings that you are taking into consideration the vein is flatter than that?
A. Because those stopes are made merely upon the merchantable or valuable ore contained within the vein; the vein extends to either side of those stopes for a very considerable distance.
Q. And the vein is not flat there?
A. The vein is probably not so flat as the stopes—as the stope section.
Q. Could you tell me what is the inclination of the vein there—what the dip of the vein is there?
558 A. I have no note taken of the exact dip of the vein at each point of that sort, but the general dip of the vein is determined by its observation on different levels and projecting from level to level. That is the only fair way in which to obtain that.
Q. And that sort of data is used all through this.
A. And that sort of data is used all through.
Q. Through all these sections?
A. Yes, sir.
Q. I would like to have the sections 9 and 10, if you please. Just lay those out. You have now presented the court with section No. 9, Mr. Frank. That also accurately represents the vein as you have developed it in that ground, does it?
A. Yes, sir.
Q. Mr. Frank, what is the highest working on the plane of that section?
A. I will say in explanation of the,——
Q. Just answer it and then explain?
A. These sections drawn thereon in black show the different levels but they do not show the stopes. The stopes extend on the plane of this section above the level shown thereon.
559 Q. What is the highest working shown on the plane of this section?
A. The highest working on the plane of that section is the stope which we were just referring to and is not drawn as a distinct working on this map—on this particular plane of section.
Q. Can you mark the plane of this section or the line of this section on the stope map, exhibit 2? Where on the line of that section are those stopes shown?

A. My estimate was wrong by probably three feet. The stopes appear just—I scale on this map the stopes just above that level that are shown only three feet to the west of the plane of that section.

Q. Now then, come over to this cross section again. How far above the Stewart tunnel level on the vein as you have painted it here do you show the vein extended—no, up toward the Osborne fault, toward its termination?

A. We show a distance of sixty-five feet.

Q. To the bottom?

A. Yes, sir.

Q. All right——

560 A. Of which distance, though, forty feet has been stoped only three or four or five feet westerly of the plane of this section.

Q. Now, come over here. From the Stewart tunnel level up to the upper portion of the red as you have projected it and painted it upon this section, how far have you shown it?

A. 110 feet.

Q. Now, just one more question, and I will be through with you, the sections following this. The uppermost workings shown upon this section 10 is also the Stewart tunnel level, isn't it?

—. ——.

561 Q. How far have you projected and painted that vein from that section to the lower point of its intersection with the Osborne fault, the termination of the vein against the fault?

A. About 93 feet.

Q. How far from the Stewart tunnel have you projected it to the point where you have shown it at its highest point of termination?

A. 170 feet.

Q. 170 feet of projection?

A. Of this part, though, there is a horizontal distance of 45 feet and a vertical distance of probably 30 feet actually stoped.

Q. On the line of that section?

A. Yes.

Q. Mr. Frank, as a matter of fact, from the point where the Stewart tunnel level is shown on that section, along that section, there is not an opening, is there; come over here so the court can see it—there is not an opening above the Stewart tunnel level on the line of that section, is there, where you have projected and painted that vein for 170 feet?

562 A. There is a stope——

Q. Now, answer that yes or no, and then explain?

A. I will say that there is an opening above the Stewart tunnel level, up above the southerly portion of the Stewart tunnel level.

Q. Yes; that is over the portion of the Stewart tunnel level that is shown away over here?

A. The stopes extend above that portion.

Q. Point that out to the court, that portion of it which is to the south.

A. Yes.

Q. From the Stewart tunnel level as shown on this exhibit, the

most northerly opening on that level, you have projected that vein upon that section without an opening for 170 feet, and painted it upon this exhibit?

A. In part, yes.

Q. In whole, haven't you?

A. I said no, because it is not all of 170 feet.

Q. Where is there an opening on that section other than the northern portion of the Senator Stewart tunnel level, within 170 feet of the upper portion of that vein as shown upon that cross section?

563 A. There is no opening in between those two points which you now refer to.

Q. And there is not an opening on the vein within 170 feet of that point where you have painted the vein against the Osborne fault, is there?

A. Yes, there is.

Q. Where is it?

A. The stopes extend over that portion of this drift.

Q. Over what portion?

A. Right over here.

Q. That is over the northerly portion. You can scale it on Exhibit 2 here, can't you?

A. I haven't got the line on there, but I can put it on.

Q. You have got this line here; it is just the next section?

A. These stopes extend to a point directly over this portion. They would not——

Q. Just come over here and put your pencil on the map on the line of that section and show the court where they extend over that portion?

A. Right there. Isn't that directly over it?

564 Q. How high over it, Mr. Frank?

A. This stope map shows three floors, which would in the ordinary course put it at about 20 feet.

Q. That is on the southerly side of that tunnel level?

A. Yes.

Q. Is that within 170 feet of the point where you have projected and painted this vein?

A. It is about the same, yes.

Q. Now, the fact is that there are no workings above what you have called here the East No. 3 Crosscut up toward the point where the Osborn fault is supposed by you to exist, are there?

A. There are workings there. There is an exposure of the Osborn fault and the point where the vein joins or ends against it.

Q. Where?

A. In the apex drift.

Q. But is that on the line of either of these sections that I have been examining you about?

A. No, sir.

Q. On the lines of those sections is there any opening above this Stewart tunnel level?

565 A. There is not.

Q. And you have simply projected and painted the vein going up there on these cross sections?

A. With the known position of that same intersection of the vein and fault on the apex drift to guide our projection, as well as the known intersection of the vein and the Osborn fault on the tunnel level at several points further down, to guide our projection.

Q. And showing the vein gradually rising on the planes of these sections toward the intersection of the Osborn fault?

A. Yes.

Q. Isn't it true that there is in this vein a fold, Mr. Frank?

A. Yes.

Q. Notwithstanding that, itcontinues to rise through the fold against the fault, does it?

A. I believe it does above that fold.

Q. What makes you believe that; have you ever seen it above that place?

A. No, sir, but I have seen it on the planes of section taken on either side of the planes of section which you have questioned
566 me about.

Redirect examination.

By Mr. GUNN:

Q. Mr. Frank, your model, with the workings shown upon it discloses that the vein is protected from certain points does it not?

A. Yes, sir.

Q. And you may state now generally the data used by you in making those projections?

Mr. GUNN: We might mark the tracing Exhibit No. 15-B, which is a tracing of the planes of section shown in the model, and the model might be marked 15-A.

The COURT: Very well.

A. I will first state that this tracing represents what might be termed a template when placed on top of the plan map, Plaintiff's Exhibit 1, and as such template represents the lines of the planes of sections upon which the sections represented by the glass plates in the model were taken, and the lines as shown on this tracing or template are brought in accordance with the number of the planes represented by the glass plates in this model, beginning from the
567 easterly end as number one. Beginning with the section or plate No. 1 of the model, we have an exposure of the Osborn fault and the vein at the point at which the line representing the plane of this section cuts through the 400 or Fit tunnel level just east of survey point No. 2537. There is at that point a distinct exposure of both the vein and the Osborn fault. Passing to section or plate No. 2 we have on that——

Mr. GRAY: It seems to me that this is not re-direct. It was gone over before.

Mr. GUNN: I am inclined to think it is. I am asking him now

to give the data from which he made those projections. Those projections were developed by the cross examination on this model.

The COURT: You went over the same subject yesterday to some extent. If you desire him to elaborate it or make it more minute, perhaps it might be considered direct examination.

Mr. GUNN: Very well. I will ask leave to have him make it more specific.

The COURT: Very well. But any new matter will be subject to cross examination.

568 Mr. GUNN: Yes, sir.

WITNESS (continuing): On Plate No. 2 we have an exposure of the Osborn fault on the 300 foot level and also on the 400 or fir tunnel level, both of which are cut by the plane of this section. Also the vein is cut on both of these levels by the plane of this section.

On section No. 3 we have the vein cut on the 400 or Fir tunnel level, the vein and fault cut on or very close to the 300 level and the fault—I am referring always to the Osborne fault—the Osborne fault cut on the 200 foot level. I could give the exact distances of the points at which these cuts are made.

Q. I think your general designation is sufficient. You may proceed as you have been doing.

A. On section No. 4 we have actual intersections and consequent exposures cut on the plane of this section on the 300 foot level of the vein, and on the 200 foot level of both the vein and the fault.

Q. If you could conveniently make your description from this side, perhaps his honor may see and hear better.

The COURT: I can see very well.

WITNESS (continuing): —and also in Raise No. 218 east,
569 extending between the 200 and the 100 or tunnel level, at the end of the tunnel level, we have an exposure of the fault which is cut by the plane of this section.

On Plate No. 5 we have an exposure of the vein and fault in or at about the level of the 100 in the raise No. 218 east. We have an exposure of the vein on the 200 foot level and on the 300 foot level, and this section does not go to the 400.

On Section No. 6 we have an exposure of the fault in the lower Stewart tunnel level, of the fault in the raise between the lower Stewart tunnel level and the 100 foot level, of the vein on the 100, of the vein on the 200, and of the vein on the 300, and I might add that there are exposures of the vein and the fault in the stopes between the different levels, as I pass.

On No. 7 we have an exposure of the fault on the lower Stewart tunnel level, of the vein on the 100, of the vein on the 200, and of the vein on the 300.

On No. 8, which section has been referred to here particularly, we have an exposure of the vein and fault on the lower Stewart tunnel levels, of the vein on the 100 and of the vein on the
570 200; also of the vein on the 300 at the extreme southerly end of the plate or section.

On No. 9 we have an exposure of the vein on the lower Stewart tunnel level and on the 100 and 200 foot levels.

On No. 10 we have the same. Section No. 10, though, is also only a very short distance easterly from the end of the exposure of the vein in the apex drift.

On Section No. 11 we have an exposure of the fault and the vein above the apex drift, we have exposures of the vein at three different points where this section cuts the lower Stewart tunnel level, also where it cuts the 100 foot level.

On No. 12 we have an exposure of the vein in the apex drift and in the stopes between the apex drift on the lower Stewart tunnel level, and there are three exposures of the vein in or just above the lower Stewart tunnel level, also on the 200.

On No. 13 we have the vein in the apex drift and in the lower Stewart tunnel level and in the stopes between the 100 and the lower Stewart tunnel level.

On No. 14, about six feet east—about five or six feet east of the plane of the cross section we have the first intersection with the Clancy fault.

Q. Now, have you passed westerly of any point where the
571 Osborne fault is exposed?

A. Yes—that is to say, no, we have not.

Q. Very well, go on?

A. I omitted one place where the Osborne fault is exposed on plate No. 12, wheere it is exposed not only near the plane of this section on the apex drift, but is also exposed in the Fir tunnel, or 400 foot level.

Q. Now, state whether or not the projection of the vein and of the Osborne fault as shown on this model correctly represents the vein and the fault through those projections as based upon the data to which you have referred and your knowledge of the actual condition of the vein and of the fault where exposed?

Mr. GRAY: I object. No man in the world can answer that question, because he has not projected between, but he has projected beyond, 170 feet beyond.

Mr. GUNN: It is an opinion of course.

The COURT: Objection overruled. It can go in for what it is worth.

A. The model correctly represents the vein and fault as exposed on the planes of these various sections, and where not exposed on the planes of these various sections it represents projections
572 from known exposures on the planes of sections to either side of those upon which it is not exposed.

Q. And these exposures are in the levels as well as in the stopes?

A. Yes.

Q. I will ask you then to put that tracing over this stope map, Exhibit 2, and point out, if you will, the development of the stoping beyond the point of development as shown upon the plan map, that is in the sections in which these projections are made?

A. I could go over each one of these plans again and show the

length and also the depth or height of the stopes which are intersected by each one of the planes of this section——

Mr. GRAY: I object to that as repetition. Just by laying the tracing on there the court can see it just as well as if Mr. Frank should repeat it.

The COURT: It is not necessary to repeat it.

WITNESS: I was going to say that I could do that, but it can be seen very readily.

573 Q. *Bow*, directing your attention—put the tracing back over No. 1 again if you please—we will take cross section No. 11, in which you say you have an exposure of the vein and the fault in the apex drift, and also an exposure of the vein in the workings below. What would be the distance of the projection of the vein, take into consideration the exposure above and the exposure below; what would be the real projection?

A. I can give that better on the stope map than on No. 1. I can put that line on the stope map.

Mr. GRAY: I object, because he did not use the stopes at all in making these sections, but he just used the principal workings.

WITNESS: That is not true. The stopes were used in making this model.

Mr. GRAY: All right. Go on.

A. The projection amounts to almost nothing, as on the plane—at one point it is only two feet westerly from the plane of this section to the point where we have the actual stopes between the lower Stewart tunnel level and the apex drift, these stopes extending continuously from the lower Stewart tunnel level to a point only about 15 feet below the elevation of the apex drift.

574 Q. Will you point out, please, on the map the points between which you stated to counsel that there was a projection of 170 feet?

A. As I have stated,—that was on section No. 10, I think—No. 10 is 50 feet to the easterly from No. 11, and while it does not cut these same stopes and there is that distance as shown on the immediate plane of this section without openings, 50 feet to the west of the plane of this section we have continuous stopes between the lower Stewart tunnel level and the apex drift.

Q. Supposing that you have an exposure in the apex drift and an exposure in the workings below and the distance between those two exposures is 170 feet, would you say that the projection was of 170 feet or is it half of that distance, 85 feet each way?

Mr. GRAY: I object to cross examining Mr. Frank. He has been very frank about his testimony.

The COURT: Objection sustained.

Mr. DINES: We submit that where opposing counsel between two known points draws a line 170 feet and says the projection is 170 feet, it is a misleading question and a wrong assumption.

575 The COURT: The court understood that in the beginning.

Mr. DINES: The record should show that, because the assumption is wrong. It would be half of 170 feet, or 85 feet.

Mr. GRAY: Mr. Dines can be sworn as a witness. They have two or three witnesses left.

The COURT: That still would not permit you to cross examine your own witness, who has more than thoroughly covered it.

Mr. GUNN: That is all.

Mr. GRAY: That is all, Mr. Frank.

Witness excused.

The COURT: Now, Mr. Clancy, you can replace this plate on the model, if you please.

Mr. GUNN: We offer the model in evidence.

Model admitted in evidence marked Plaintiff's Exhibit No. 15-A.

Mr. GUNN: We also offer the tracing in evidence.

Tracing admitted in evidence without objection marked Plaintiff's Exhibit No. 15-B.

Mr. GUNN: There is a suggestion that I think counsel
576 will admit, that the record should show that this model was submitted to them for their consideration last evening, and that they were given an opportunity to take it apart and to study it.

Mr. GRAY: Yes, we will admit that.

The COURT: Let the record so show.

577 CYRUS F. TOLMAN, JR., after being duly sworn as a witness for plaintiff, testified as follows:

Direct examination.

By Mr. DINES:

Q. Mr. Tolman, please state your full name?

A. Cyrus F. Tolman, Jr.

Q. Your residence?

A. Palo Alto.

Q. And your occupation?

A. I am a mining geologist and a teacher of economic geology.

Q. With what institution are you now connected?

A. With the Leland Stanford, Jr., University.

Q. Did you have any technical training in any school to fit you for this profession?

A. I graduated in 1896 from the University of Chicago in the geological department. I was Fellow in Geology in 1897 and 1898.

Q. And what degree did you receive in your technical
578 training?

A. In 1896 I receive- the degree of B. F.

Q. Now, from that time on, what actual experience have you had in following this profession; with what companies have you been associated and over what scope of country have your observations and studies extended?

A. In 1899 to 1900 I was chemist for the Anaconda Copper Mining Company, during which time I made a special study of

the chemistry of copper ores, and investigated specially the secondary enrichment of that ore. From 1900 to 1913 I have been in active practice as a consulting mining geologist. 1905 to 1912 I was head of the Department of Geology and Mining at the University of Arizona. 1910 to 1912 I was territorial geologist of Arizona. 1912 to 1913 I have been in charge of the teaching of economic geology at the Leland Stanford University, with the rank of Associate Professor.

Q. Now, over what states have your observations extended?

A. My observations have extended especially over the southwest of the United States, and the northwestern portion of Mexico. And as I stated before, I also was employed in studying the ore deposits in the vicinity of Butte, Montana.

579 Q. For how long a period did you study ore deposits at Butte, Montana?

A. For a time probably of several months; probably six months.

Q. For what company?

A. For the Anaconda Copper Mining Company.

Q. What study or experience have you had along the lines of the origin and character of ore deposits?

A. The subject of ore deposits has been my especial study. In pursuance of this I have examined practically all of the important mines of Arizona. I have made detailed examinations of a great many mines and prospects in Arizona and Sonora; as the territorial geologist I collected data regarding the deposition of ore and ore deposits, especially regarding replacement ore deposits, of which we have a large number in Arizona. I have studied all other structures incidental to the deposition of ores, such as the effect on ore deposition, of faulting and fracturing and folding of the rock.

Q. Are you familiar with the ore deposits as far as they are developed in the Senator Stewart Fraction Lode Mining Claim, the Senator Stewart lode mining claim and the adjoining claims, and in the Ontario, as shown on Exhibit 1?

580 A. I have examined most of the accessible workings as shown on Plaintiff's Exhibit 1, and am familiar with the ore deposits shown therein.

Q. When did you first make your first examination of the mining properties of the Stewart Mining Company?

A. I first examined the mining properties of the Stewart Mining Company, from October 1st or 2nd, 1912, for a period of three days. During that time I made a preliminary examination of the properties in order to determine whether my opinion in regard to these properties and the result of my studies corresponded with those of the staff engineers of the Stewart Mining Company.

Q. Was that in relation to the present litigation?

A. It was.

Q. And how extensively did you go through the property at that time?

A. At that time I went through the property—through the Fir tunnel, I examined the ore at a cut which is now shown on Plaintiff's Exhibit 1 at point 2513. At that time I made a trip up through

the stopes and out in the 300 foot level. I also went along the accessible workings of the 300 foot level and descended through the stopes into the Frank ore body at the west, examining
581 what could be seen of the ore in these workings. I visited the 200 foot level, and I did not make a detailed examination of these workings (indicating) as at that time the workings were not made beyond here, and I went out to the level and went up these raises and examined the stopes here up about raise- 218 and 218, the stoping that they have above drift 205 west, above points 2067, 2062, 2066 and 2087. I did not visit the 100 foot level at all during that trip, or during my present examination. I went up to the tunnel level, or the old Senator Stewart tunnel level, and I went up in that raise, a raise known as raise No. 2 west. I went northeast along the 100 foot level and went up through raise 4 east to the surface. At that time the apex drift was not driven. I also visited a cut——

Q. That last statement that you made, was that on the 100 foot level?

A. No, sir, that was on the tunnel level. I did not visit the 100 foot level.

Q. Well, can you state generally, without asking for the details, Mr. Tolman, whether you examined, with the exceptions that you have named, the accessible workings?

582 A. I examined a good portion of the accessible workings on my first trip.

Q. Now, after that what extent of observation have you had of this mine?

A. I made a second trip to the mines, leaving Palo Alto December 4th and returning December 20th, during which time I made a more detailed examination of the accessible workings.

Q. And after that, what other observations have you made?

A. From January 2nd to the time of the lawsuit I visited the workings practically daily.

Q. Are you able to determine, as the result of the observation and study that you have made of this vein, what character of vein it is?

A. I am. The vein is a replacement vein. By a replacement vein I mean a vein which is formed by the solution of the country rock and the simultaneous precipitation of the ore through chemical reactions. The Senator Stewart vein is undoubtedly a replacement vein, and as a replacement vein it shows the irregularities that we might well expect from such a vein. A replacement vein is
583 deposited very often in a more soluble rock than the quartzite. The replacement veins, for instance, in Arizona are largely in the limestone, and there, the rock being very soluble, these veins spread out in most fantastic form, spreading out through the soluble layers of the rock, extending for hundreds of feet beyond the line which might be considered the average line of the dip and strike.

584 The Senaor Stewart vein does not show anywhere near as wide departures from the ordinary shape of the deposits as

do these deposits in the more soluble limestone. The replacement vein in the workings of the Stewart Mining Company is a replacement ore body in quartzite, and quartzite is not as soluble a rock as the limestone. The shape therefore of the ore body is not guided by the solubility of the quartzite but by the presence of gouges, by presence of dams, by the presence of impermeable layers of gouge in the rock. The solutions asce-ding striking these gouges or impermeable layers and not being able to get through these layers have spread out underneath these layers, have cut out across country, have former shapes which are governed then by the said gouges.

Q. What are the distinguishing characteristic irregularities of replacement as compared with ordinary fissure veins?

A. An ordinary fissure vein, so-called, is a deposit formed in a fissure. It is a tabular deposit and its form depends on the shape of the fissure. The fissure is generally filled with ore, and therefore the boundaries of the ore are sharply determined by these
585 fissures. The other features—the ore in the fissure is precipitated along the sides of these fissures, and therefore shows a banded structure parallel to the fissuring. Very often there will be separate bands showing the different changes in solution, but these bands are always approximately parallel to the fissure or the fissure that guarded the solution.

Q. How is it in a replacement vein?

A. While in replacement ore deposits the ore spreads out either in the soluble layers as I have already stated, or by limestone ore deposits replacing the country rock. The replacement here may be so perfect that the ore will retain all the structure of the replaced material, and in that case we may have a banded deposit, but the bands will be the bands of the country rock and will not be parallel to the lines of the fissure.

Q. What about the irregularities of dip and strike of replacement veins as compared with dip and strike of fissures?

A. The replacement veins vary in the dip and strike far more than any fissure veins of which I know. They spread out in almost any conceivable form.

586 Q. Now, taking the result of your observations here, did you from your own personal investigation and observation of the ground satisfy yourself as to where the top or apex of the vein disclosed in the Stewart workings is with reference to the surface boundaries of the Senator Stewart Fraction Lode mining claim?

A. I did.

Q. Please show to the court where the apex of that vein is with reference to those boundaries? Designate it yourself and use any of the exhibits already in evidence.

A. The apex is shown here projected on the plane of the map, plaintiff's exhibit 3. The apex is shown on plaintiff's exhibit 3 projected on to a horizontal surface; that is, it shows the true horizontal position of the apex. We cannot get the vertical position of that without going through the mine workings, and the apex runs approximately ten feet below the surface in the apex drift, and it is shown ten feet from the surface of raise 4 east. It is also shown in

the apex drift extending—or shown near point 2502 at the intersection of the Osborne fault with the vein material. The apex is also shown on the old lower Stewart tunnel level. It is shown
587 in a drift which is the extension of No. 3 crosscut. This apex may be examined in this drift, in the drift itself showing very plainly at a point west of raise 218. I have not seen the apex itself all the way down this raise, as the ore rises slightly above the raise, but to all practical purposes the apex extends down raise 318 east of the 200 foot level and from there it can be traced down through the workings to a point near point 2537 on the little drift off the fir tunnel.

Q. Now, what course does the apex take generally from the point where it crosses the easterly side of the Senator Stewart Fraction and to the apex drift where it is exposed above there and from there to where the apex crosses the southerly side line of the Senator Stewart Fraction?

A. The apex approximately takes a northwesterly course from the point designated on the fir tunnel level up to the point of apex, the actual point under the surface of the wash. From there the apex extends in a southwesterly direction crossing the side line of the Senator Stewart Fraction at the top of raise 2 west.

Q. Why do you call it the apex of the vein?

588 A. Because it is the upper termination of the vein. It is the upper terminal edge of the vein.

Q. Now, what can you say—take a point from the point that you have already disclosed in the top of raise, draw a line from that parallel with the easterly end line of the Senator Stewart Fraction claim, what can you say as to all the workings that are disclosed easterly of that line, do they belong to one of several veins, and if so, what vein?

A. All east of the line designated from the point of the raise 2 west approximately at right angles to the side line of the Senator Stewart Fraction, all of the vein shown in the workings southeast of that line, all of the workings are on the Senator Stewart vein.

Q. To what vein do the ore bodies that you have referred to underneath the surface of the Ontario claim belong?

A. They belong to this same Senator Stewart vein, or the old Stewart vein.

Q. Where is the apex of the bodies of ore lying in the Ontario claim?

A. The apex of the ore bodies lying in the Ontario claim
589 lies as exposed nearest the surface in raise 4 east at a point about ten — below the surface of the ground.

Mr. GRAY: I wish you would read that question again, please.

(Question read.)

Mr. DINES:

Q. The apex of the vein to which they belong.

A. The apex of the vein. This would show the point of apex nearest the surface (indicating).

Q. What line of apex?

A. This line of apex I have already traced is approximately shown on plaintiff's exhibit 3, in this direction here (indicating).

Q. If you project vertical planes, the one through the easterly end line of the Senator Stewart Fraction projected, and one parallel to the end lines through the point where the apex on exhibit 3 crosses the southerly side line of the Senator Stewart Fraction, will the ore bodies of the Ontario lie between those vertical planes indefinitely projected in their own direction and vertically downward into the earth?

A. They will.

590 Q. Have you looked at this model, plaintiff's exhibit 15-A.

A. I have.

Q. Does that represent or illustrate the conditions as you found them there in your examination?

A. I have not made the necessary projections to show the margins of the ore bodies, but the ore body as a whole passes through approximately that direction.

Q. On the 400 level I would like to get some data from you, if you please. What is the strike of the Osborne fault in that portion of it that is disclosed in the 400 level?

A. The Osborne fault is shown in drift 405 east at the extreme end of this drift or face in here. It is also shown in the fir tunnel, and it is also shown in the lateral from the fir tunnel. It is also shown in a point out from the cross cut designated as 400 north. The strike of the Osborne fault at this level is north 80 west.

Q. What is the dip of the Osborne fault at that level?

A. The dip of the Osborne fault averages 65 degrees at a point designated by my ruler which is a point about ten feet north-

591 easterly from point 2513.

Q. What is the strike of the Stewart vein at the same place?

A. The strike of the Stewart vein as disclosed in drift 405 east is south 88 west.

Q. What is the dip of the Stewart vein at that point?

A. The dip of the Stewart vein at that point is 45 degrees in a southerly direction.

Q. What are the strike and dip of the Osborne fault as you find it on the 300 level?

A. I might add to that, that the included angle between those two is twelve degrees.

Q. I beg your pardon; I did not catch that.

A. In regard to the two strikes, I might add that the included angle between those strikes is approximately twelve degrees?

Q. Yes, sir; I should have asked you that. The included angle, that is on the 400?

A. On the 400 foot level.

Q. Three hundred foot level, please give the same data both as to the Osborne fault and the same vein and the angle?

592 A. On the 300 foot level the Osborne fault strikes north 70 west; it dips in a southerly direction at 70 degrees. The vein strikes south 88 west; it dips in a southerly direction fifty degrees.

Q. And what is the angle?

A. The included angle between the two is 22 degrees.

Q. Now, on the 200 level?

A. The 200 foot level, the strike of the Osborne fault is north eighty west; its dip is seventy degrees in a southerly direction, and the strike of the vein is south 76 west, and its dip is fifty degrees.

Q. The angle?

A. The angle between the two is twenty-four degrees.

Q. Between the vein and the fault. Was what—how many degrees?

A. Twenty-four degrees.

Q. Now, at the apex drift.

A. By skipping the tunnel level, the apex drift——

Q. Before you give that, you had better give that on the tunnel level?

A. The strike of the Osborne fault on the tunnel level is north 70 west; its dip is 80 degrees; the strike of the vein is south
593 85 west, and its dip is 35 degrees in a southerly direction. Both fault and the vein dipping in a southerly direction, the included angle is twenty-five degrees.

Q. What do you refer to—will you indicate with your pointer on Exhibit 1 what you refer to as the tunnel level in the last?

A. In this point, all of these points are taken within fifty feet of the apex as shown in the workings.

Q. Now, your apex drift, give us the same data, if you please?

A. The apex drift, the strike of the Osborne fault is north 75 west; its dip is sixty-five degrees southerly. The strike of the vein as disclosed in the eastern end of the tunnel is south 83 west. The included angle is 23 degrees. The dip of the vein at that point, I have not noted in this place, but it is approximately forty degrees.

Mr. DINES: You may take the witness.

Cross-examination.

By Mr. GRAY:

594 Q. Professor, you agree, I understood you to say with Mr. Clancy so far as he has testified and shown the courses of the various levels and the vein upon those levels?

Mr. DINES: I object to that, your honor; I do not think it is a proper form of examination; it assumes that he has answered a question with reference to what Mr. Clancy testified.

The COURT: He said on his first examination he agreed with the staff engineer. He did not mention Mr. Clancy's name.

Mr. DINES: Yes, but as to the conclusions, not the data; this question relates to the data.

Mr. GRAY: I am perfectly willing, if he disagrees with Mr. Clancy's conclusions, to eliminate from the question the conclusions.

Mr. DINES: He may not have heard it, and may not know what they are; I think, in fact, he did not hear it.

The WITNESS: What is the question?

Mr. GRAY: I understood you to say that you agreed with Mr. Clancy in his mapping of the workings and in the courses of the drifts and workings and vein which he had determined from
595 his careful examination extending over a year and a half.

Mr. DINES: One moment, Professor. Please do not answer that question. I object to that question because it is improper, misleading, assumes things the witness has never stated and that counsel has nothing whatever to draw such an inference from.

The COURT: I think the objection should be sustained. That is not what the witness stated, Mr. Gray. He did not mention Mr. Clancy's name.

Mr. GRAY:

Q. Who is the staff engineer to whom you referred?

A. I referred in respect to the apex as being——

Q. No, Mr. Tolman, in this examination answer my questions.

A. Mr. Clancy.

Q. You agree with the staff engineer Mr. Clancy and with the investigations which he has made showing the courses of the vein and its inclination and openings upon it?

A. I agree with Mr. Clancy in regard to the mine workings, but the courses of the veins that I have just given were taken
596 entirely by me.

Q. If they disagree with Mr. Clancy's testimony, you disagree with him, do you, in that respect?

A. In that respect I do.

Q. Now, Professor, I understand that you have given a particular attention in your study of geology to the question of faults?

A. Yes, sir.

Q. I presume that you have in your investigation of this property given particular attention to the faults which you found there?

A. I have studied the faults that I found there.

Q. There is a fault which has been called here the Clancy fault, Professor?

A. Yes, sir.

Q. You are familiar with it?

A. I am.

Q. And is there anything disclosed in the development which will justify you in stating what the throw along that fault was?

A. I think not.

Q. So far as the workings show it is impossible to say
597 whether it was ten feet or one hundred feet; is not that true, Professor?

A. No.

Q. What is the fact with reference to the throw?

A. The vein is discontinuous beyond the Clancy fault. The vein cannot be traced—the Senator Stewart vein cannot be traced and identified absolutely in a northwesterly direction from the Clancy fault, and while we cannot determine what the throw is because we cannot identify the vein, we also cannot say what the throw is not.

Q. No. Well, that is what I say, you cannot say what it is or what it is not?

A. The amount of movement here cannot be determined because there is no vein that can be correlated beyond the Clancy fault with the Senator Stewart vein.

Q. Yes, sir. It cannot be determined from the workings which you have visited and from the investigations which you have made; is that what I understand you to say?

A. Yes, sir.

Thereupon a recess was taken until 2:00 o'clock P. M. of this day, Friday, January 10, 1913.

598 FRIDAY, *January 10th*—2 p. m.

CYRUS F. TOLMAN, resumed the stand for further

Cross-examination.

By Mr. GRAY:

Mr. GUNN: There is one correction that the witness desires to make, your honor, before the cross examination proceeds.

The COURT: Very well.

WITNESS: In my dip of the vein on the apex drift I should have read it as 60 degrees instead of 70. I did not read my notes correctly.

Mr. GRAY (cross-examination resumed):

Q. Professor, what faults do you wish the court to understand you as saying have pre-existed the vein?

A. Those faults under which the ore makes.

Q. Name them?

A. There are a very large number of little fractures. As far as I know there is no great structural fault later than the vein, but there are a great many gouges especially between the 300 and 400 foot level-.

Mr. DINES: I wish you would read that answer and see if
599 the witness made the statement he intended.

(Answer read.)

WITNESS: I will correct that. There is no great structural fault that does not cut the *cut the* vein.

Q. These little gouges and cracks that you speak of structurally are not comparable to either the Osborne fault or to the Clancy fault or the No. 11 fault?

A. Certainly they are not comparable, but they are sometimes cut very sharp; they have apparently good sharp walls, and to all appearances they seem to be pretty sharp slips. They might be easily be mistaken for important faults.

Q. In your judgment, what has that got to do with this case?

Mr. DINES: We object to that as immaterial, asking him to draw a conclusion of law.

(Objection sustained.)

Q. Now, Professor, we will go down to the Fir tunnel. Where was that point where you took the strike of the vein that you say shows that the vein has a course of south 88 west?

A. The vein?

Q. Yes.

600 A. That strike I took along drift 405 east. I Obtain the strike of the vein at that point by looking at the ore in the face of the drift and looking at the structure of the ore and sighting in that direction.

Q. Now, has it that course along the entire drift which you have mentioned?

A. That course is my nearest approach to the average course of that vein for a distance along that drift. Of course I could not make the examination every inch, but that is my best judgment.

Q. Just point that out to the court.

A. It is this strip right here.

Q. The drift from point 2513——

A. From 2513 to 2537, yes.

Q. For what length does the vein have the course which you have described to the court?

A. That is the only place that I could get a satisfactory strike. I think the probability is the strike may change, but that is the strike as near as I could get it for a distance of about 50 feet from the fault. All my strikes were within a distance of 50 feet from the fault.

Q. From that point approximately 50 feet from the fault
601 to the most southerly workings on that level, what is the general course of the vein?

A. I could not give it to you for such a long distance, because the arc there changes, and I could not give it any more than I could give you the general strike of a circle or a portion of a circle.

Q. You say on that level that the vein in its course described the arc of a circle?

A. No, I don't say that, but I say I could not give you the average there.

Q. I did not ask for the average; I asked for the general strike. See if you can give that?

A. I don't believe, Mr. Gray, that I can give you the strike from my own observations except the strike in the vicinity of the Osborne fault. That is the only place that I have made very detailed observation.

Q. Didn't you consider that, in order to be able to testify as to this vein and its relation to the lines of the claims, that you should take its strike at places other than the points within 50 feet of the fault?

A. I don't think that I needed to study it in such detail as to give the exact strike. The direction I can give you approxi-
602 mately, if that is what you want, for the different portions.

Q. Why did you consider it more important to take the strike of the first 50 feet instead of that of the last 750 feet?

A. Because that is the portion that I studied especially.

Q. We have here the plan map of the 400 foot level, Plaintiff's Exhibit No. 14. Point out to the court on there where you took the strike.

A. This is the drift. I do not see it named on here, but this is the same drift.

Q. You pointed to that part of course?

A. Yes. I don't see the name on it.

Q. That is the drift which is shown right along the edge of the vein against the fault approximately?

A. Well, it goes against the fault up here. The fault dips and throws the vein down in the bottom of the working, of course, and you get your exposure there by going up. It is platted apparently showing that it is down in the middle.

Q. The platting is not quite correct then?

A. No, the platting is correct as far as I know. I say that
603 you cannot get the strike from that point of the vein; as you get away from that 50 feet you get the strike of the vein.

Q. That is purely a local strike that you took at that place?

A. No, it is not a local strike; it is the strike for about 50 feet along there.

Q. Now, let us take the strike of the vein from the point at which I now place my pointer, along for another 50 feet, and tell us what that is, where the vein leaves its termination against the Osborne fault, the foot wall of it; what is the strike there?

A. Well, the strike is approximately shown by that line, I suppose.

Q. Well, what is it, Professor?

A. The strike is approximately shown by the direction of the stopes in Drift 405 east; approximately, I should say, about south 40 east.

Q. That is the footwall, is it?

A. Well, that is the direction of the vein. No, I will correct that; it is south 50 west.

Q. The course of that footwall is shown as what?

604 A. About south 40 feet for the footwall.

Q. And that continues for a considerable distance there with that strike?

A. No, it goes right along there.

Q. Let us take from the point where I lay my pointer now, and take the strike southerly from there?

A. Well, I did not take the strike in there.

Q. Well, you can tell it on the map?

A. I can give it as it is shown here, if you want that.

Q. I would like to have you do that?

A. That is practically south 7 west.

Q. And it continues in that course about how far?

A. Well, apparently I should presume here—I haven't examined this part of the vein in the country rock.

Q. That is the southern part of the vein that you have not examined?

A. From this portion here on I examined this here. This is simply a projection across here.

Q. Just give us the course?

A. I have given you the course to the Ontario workings. That is apparently the Silver King tunnel.

605 Q. Through the Gray, what is the course?

A. I examined it in there, but the vein is marked by a line of stopes, and I took it to be approximately the line of the workings there.

Q. That would be approximately south 24 west?

A. I presume it is something like that, 24 or 25.

Q. For how many hundred feet does that strike continue?

A. That strike seems to continue for 280 feet.

Q. There you encounter a small fault between that and the May drift?

A. That fault is reported there and I have no doubt it exists, but I did not study it; I could not get in.

Q. You saw the May ore body?

A. I saw the May ore body but I could not get in there.

Q. What is the course of that ore body?

A. Approximately as shown in the working there?

Q. About south 24 or 25 west, perhaps a little more than that?

A. As I take it here, it seems to be about south 35, west.

Q. And that continues for approximately a little over 100 feet in length in that level?

606 A. I could not say without measuring. I have not seen the full continuation of that, but assuming that that is the length of the drift there, as I suppose it is, it is approximately 100 feet.

Q. Then you encounter the No. 11 fault?

A. That is the name that it has been called by, I believe.

Q. And on the other side of the No. 11 fault you encounter the Frank ore body?

A. Which is approximately a parallel, as it looks, to the May ore body.

Q. And which continues for how many hundreds of feet on that course?

A. I could not say; I do not see the end of the workings here.

Q. Well, you can take Exhibit No. 1 perhaps; that shows the length of the working?

A. Yes, that is approximately the end of the workings; it is approximately 200 feet.

Q. Is that cut off on its southern end, or is the vein still continuing upon its course as you saw it disclosed in the southern face of that working?

607 A. I did not see it go on there.

Q. You have no reason to believe that it does not continue indefinitely or for a considerable distance beyond?

A. I don't know; I have no reason to think it is cut off, but how far it would continue I could not possibly say.

Q. Now, let us go back to this map again, and let us find on the

400 foot level, Plaintiff's Exhibit 14, what is the course of the vein from station 2181?

A. I could not tell you. The whole vein is a brecciated mass in there, and there are no definite structural features at that point to measure.

Q. I will place my pointer on the vein as shown on Exhibit 14, at a place just above where the shaft is shown passing under the hanging wall there. What is the course of the vein for 50 feet from there in a southerly direction?

A. If I give that I would have to scale it from these maps, which are not my maps, and I could hardly testify to that.

Q. You do not question their accuracy?

A. I do not question them, but I can only give it from that map.

Q. Then give it to me from that map?

A. Yes. From this map at that point I should say the
608 strike is due south.

Q. For some distance?

A. Well, it is due south there, I presume, for at least 50 feet in that place, and then it is practically south generally as far as shown, or apparently a little to the west.

Q. Take the hanging wall of the vein as disclosed upon this level. What is the course of that for the first 50 feet in a southerly direction from the Osborne fault as disclosed upon Exhibit 14?

A. That is not open. I have never taken a course anywhere except where I could see it. I can give it to you from this projection.

Q. Yes, that is what I mean?

A. South 50 west.

Q. Then it continues down?

A. It turns a little to the southerly.

Q. About south 30 or 40 west?

A. I should think so, coming down here southerly and then turning slightly to the southwest.

Q. There is some flattening of the vein there, is there?

A. Oh yes, of course that vein is flat out through there.

609 Q. You can take little stretches of 50 feet here and there and get almost any strike on that level, can't you?

A. You could if you measured it by taking the map projection and measuring it in the middle of the country rock, yes, but that is not the way it is usually done.

Q. Is it usual, as far as your practice and experience goes, in determining the strike or course of a vein, to take some local course or strike that you may find for 50 feet where the vein has been developed on that level for hundreds and hundreds of feet?

A. Why, yes, I think so; if you take but the 50 feet, it is.

Q. And say from that local strike that you get in that 50 feet, that the strike of the vein is as disclosed there?

A. Certainly, for that 50 feet, yes.

Q. You did not intend to be understood in your testimony as saying to the court that the strike of the vein was as given by you?

A. No, by no means. The vein curves, and you can no more say that—it would be as foolish as if I had said that the strike of a circle was anything definite. I selected a special portion of the vein to investigate.

610 Q. And that portion was within 50 feet of the Osborn fault?

A. Yes.

Q. How far from the line of the fault on that level was the point at which you were furthest away from the fault in taking that course?

A. In that lower course there it was quite close; I should say ten feet; that the furthest distance would be 10 or 15 feet.

Q. In other words, you took the course along the fault, the course of the vein along the fault?

A. Yes, but I took the strike of the vein, not the strike of the fault. I did not take the intersection.

Q. I understand that, and in taking that strike you did not get away from the fault over about 8 or 10 feet on that level?

A. No, not on that level.

611 Q. You concede, of course, that the vein has been affected for some short distance from the fault by the fault?

A. Well, I do not know; it has been twisted, but whether that has been done by the fault or not would require a definition of what the fault was.

Q. With your experience in the study of faults would you consider that the rock masses on the southern side of the Osborne fault could have moved against that fault more than a mile without affecting the rocks for some little distance away from the fault?

A. I think probably the bending or dislocation was done before the break was made. I imagine that the twisting or bending of the vein took place under great pressure, and then finally there was a break or a relief, a slip, and I doubt very much if the bending is due to the movement of that fault.

Q. Just read the Professor my question now, Please.

(Question read.)

A. No, I would not.

612 Q. Take the 300 and just show the court over here where you took that course—back of the vein on the 300 level, where you say you got a course of south 88 degrees west?

A. That is correct, south 88 degrees west.

Q. Where did you get that?

A. The structure of the ore body shows very well up in this stope, a little bit above point 2528. The strike of the vein from that point 2528 over to the Osborne fault by examining the vein at that point and the footwall was as I gave it.

Q. For how long a distance did the vein have that?

A. I have already stated approximately fifty feet.

Q. And that course for fifty feet?

A. Yes, sir.

Q. How far away did you get from the fault by taking that course, Professor?

A. I would say about fifteen feet.
Q. About fifteen feet?
A. Yes, sir.
Q. Will you look at plaintiff's exhibit 13 and indicate to the court on that plan map where it was that you took that course?
A. There is a station at the point where the end line of the
613 Senator Stewart Fraction claim is shown; it was about from that station to the east, I do not see any other points of reference. That station is how far south of the Osborne fault?
A. That station right there is very close.
Q. Within two or three feet, isn't it?
A. Well, not quite that close, I don't think; perhaps five feet; perhaps three feet.
Q. Yes, sir; and you took it from there along to the point where the vein is last disclosed in that——
A. After I took a sight down here I could see the footwall of the vein very well on account of the structure, and you can see throguh the stopes, and I tried to get the average as close as I could for the last fifty feet of the vein in that fault.
Q. It is parallel approximately to the fault there?
A. No, the strike is not parallel; it is 22 degrees from the fault.
Q. The point most easterly which you took in connection with the station was right up against the fault, wasn't it?
A. It must have been very close to the fault; I could not
614 say it was right together, but whatever place it was at the point that I could see the back of the vein before from looking in that direction.
Q. In other words, you started at a point five feet away from the fault and took a course down to where you last find the vein on that level against the fault; that is stating it correctly, isn't it?
A. Well, I did not confine myself to that. In that direction I took as many sights as I could in there; I could not say that my only sight was within five feet.
Q. The course that you have given me, you said you took from this point where the station is to that point in that little——
A. Well, it is approximately that, yes. I did not see the stations.
Q. Did you attempt to secure the sight of the vein on its course for hundreds of feet southerly on that?
A. You can get that from the workings of the 300; you could not get it from the structural feature of it, you could not get the strikes in here, but you can take them from the workings.
Q. I do not care about that. We find that this section 4
615 on exhibit 13 passes approximately along the course of that vein, does it not?
A. Well, no, I would not say.
Q. How far along the Osborne fault from the place where the vein is last shown in a westerly direction does that section cross the fault, along the line of fault?
A. On this section?
Q. Yes.
A. From the vein of the fault?
Q. No, sir, along the fault where it is——

A. Ninety-five feet.

Q. That passes through away to the south hundredths of feet from there the ore bodies in the Gray?

A. Yes, sir; I think this is the Gray.

Q. And in that distance of approximately 700 feet the vein has only departed, the hanging wall of the vein, ninety and ninety-five feet from the line of that section, hasn't it—the foot wall of the vein, I should say, Professor?

A. I think this is the greatest displacement in that line.

Q. On the Osborn fault?

616 A. Yes, sir.

Q. You did not take the courses elsewhere along those workings which were open for hundreds and hundreds of feet, did you?

A. The course is shown so well by the working in here that it would be unnecessary; it is not complicated by a question of intersection with a fault. You do not study to get the true directions the way you would at that other point. You just go to the workings and see the way they are driven out on the ore, the way the miners work there.

Q. And they are driven out on what course, those workings?

A. The workings of the Gray ore body, I believe it is called there——

Q. Yes, sir.

A. About south 30 west.

Q. On the 200 level where was it that this course of south——

A. The same conditions that I have described.

Q. That the course followed as cut off from the fault?

A. No, sir.

Q. How far away did you get from it this time?

617 A. It does not matter how far I get away from it, but the vein has a definite direction and the intersection another; I took the direction of the vein the last fifty feet.

Q. Just point out to his honor on the map where you did that?

A. I got a very good sight from a little raise on the 200 foot level. At the bottom part of this raise 218 east, and the dip of the vein or the strike of the vein was taken in and would not govern the direction of the ore more than a short distance west of that raise.

Q. Now, Professor, you say right at the bottom of that raise. Now, then, from what point to what point?

A. I took from where you can see the ore in the raise and took my sight in the direction the ore extends. I did not see the——

Q. You did not take it then on the level?

A. I took the sight on the level, yes, sir; I simply saw what direction the ore was going and put it down.

Q. Did you see up in the raise?

618 A. No; you can see the ore not clear up in the raise, but you can see the direction of the ore in the raise, and I have that marked as the point in which I took that direction.

Q. The fact is that the foot of that ore along that raise is disclosed as the Osborne fault?

A. Yes, sir; the Osborne fault comes back of that; you can see it:

Q. It is in the drift here just as Mr. Clancy marked it in blue on that map?

A. It crosses there down on the level but you can get up a few steps and get the ore.

Q. For what distance was this ore up in that raise exposed, this vein that you took the course, how wide is the raise?

A. How far up the raise?

Q. Yes, sir, how far up the raise was it where you took the sight?

A. The ore goes up eight sets in that raise, approximately.

Q. Where was it you took this sight, how far up this set where you saw the course of the ore?

A. I did not mark the number of sets up; I think it was
619 about two or three, where you can see that ore very well in there, see the structure.

Q. Yes, sir; and that is for how far, how wide is the raise?

A. That would govern for the direction in here, because you can get a very good strike on the vein right in the drift there.

Q. Yes, sir, and that is what?

A. The average of that on the 300 foot level is north seventy west.

Q. What is the strike of the Osborne fault in there?

A. No, I beg your pardon, it is south, eighty west, the Osborne fault is.

Q. Didn't you give it south 76 west in your testimony this morning?

A. On the 300 foot level?

Q. On the 200?

A. Oh, I beg your pardon. It is south 76 west. That is correct.

Q. What is the course of the Osborne fault there?

A. North 80 west.

Q. And you took that only for fifty feet and again dis-
620 regarded the hundreds of feet of opening upon this vein upon its course?

A. No, I did not disregard it; I saw the vein going out in its course.

Q. That is approximately on its course?

A. Yes, sir, with the workings that have been testified to?

Q. Yes, sir; and the same is true on the Stewart tunnel level, you saw it out for a distance along the place of the fault?

A. The distance I should say would not hold more than for a distance of fifty feet.

Q. How far away from the fault did you go in getting that course?

A. About the same, about three or four or five feet, approximately.

Q. And in giving the course you only took that into consideration and did not give any consideration to the hundreds and hundreds——

A. I gave it consideration, yes, sir; that only gives the strike up in this direction here; this is just as important if one is
621 studying the strike here, but the strike changes, and I simply took a certain part of the strike to study.

Q. The Stewart tunnel level discloses for hundreds of feet the course of the vein on the highest level——

A. Yes, sir.

Q. Approximately north 30 east and south 30 west, does it not?

A. Yes, sir.

Q. Let us go to the apex drift.

A. Yes, sir.

Q. Where is the Osborne fault disclosed in the working, this easterly working of the apex——

A. Approximately at a point marked 2502, a little north of that.

Q. Would you mind taking a blue pencil and mark that on there, Professor, as accurately as you can, how it is shown and the course it crosses there?

A. Something like that (indicating).

Q. That is the blue line under the "W" and just over station No. 2502 that you gave?

A. Yes, sir.

Q. Where did you take the strike of the vein in that?

622 A. The vein. This is the fault that I put on there.

Q. I understand, but I have gone to another question now. You said you took the strike of the vein in there.

A. Well, here, the strike of the vein I took along the footwall——

Q. Of the apex drift?

A. Of the apex drift, yes, sir.

Q. And what did you say that is along there?

A. South 83 west.

Q. Just to what point now did you take it, from what point to what point?

A. From a point a little north of 2502 to a point approximately five feet north of 2117.

Q. You say, professor, that that vein is disclosed throughout that entire distance?

A. Yes, sir, the vein is, certainly.

Q. The vein is disclosed there?

A. Yes, sir.

Q. The footwall of the vein all the way?

A. I think so, yes, the footwall shows coming up on its apex, and the drift was driven along the footwall of the vein. I saw it numerous times while it was driven, and watched the fracture

623 very carefully to be sure that was along the footwall.

Q. I want to go back again just for a moment to the stopes that are immediately above the fir tunnel level, immediately above this little working that runs out along the Osborn fault—above the fir tunnel level—would you be good enough to give me the course of those stopes as shown upon exhibit 2?

A. I have not the strike in the stopes, but I can give you the direction of this line here which shows.

Taking this line through here—south 52.

Q. Those are immediately over the place where you got this——

A. Yes, sir.

Q. Immediately over the place where you got this course of south 80?

A. I don't know whether the real structure of the vein there—whether that is the strike of the vein or simply the strike of that line on the stopes there.

Q. The miner usually follows the vein as he finds it?

A. In a regular ore body I should imagine he could open the stope up in any shape, and I would not see why the stope
624 would show the direction of the strike in an irregular ore body.

Q. They do in that mine, though, don't they?

A. I suppose in some places; they certainly do not here. They swing around that way (indicating). Those stopes could be opened up in any way as far as possibility goes, the way the stoping is done they run out as far as there is ore.

Q. Now, Professor, taking the Frank and the Gray ore bodies, their course is approximately south 40, did I understand you to say?

Mr. DINES: Directing it to exhibit 2?

Mr. GRAY: On any of the exhibits.

A. I gave you that course; I could do it again. South forty west as I remember it, something like that.

Q. Between thirty and forty. And the dip is what?

A. I did not take the dip there, but——

Q. Didn't you take the dip in those ore bodies of the vein?

A. No; it is shown by the stopes; you can calculate it better.

Q. It would be approximately what?

A. Well, just to guess, I should say about sixty degrees,
625 something like that.

Q. Did you go up from those workings to the Stewart tunnel level and up along that until you came to what has been marked here the apex of the ore body as it crosses the Senator Stewart claim?

A. Yes, I have been up through those workings. I went up those workings twice, I think. I went up—I don't remember now which ore body you spoke of—this ore body or this ore body?

Q. I will take the Frank as you wish?

A. Yes, sir.

Q. You can do the same thing. I presume, with the Gray, can you not, by taking a little different course?

A. Yes, sir, you can by taking a little different course.

Q. You would follow right up through, raising all the time until you come to what is marked the apex across the Senator Stewart claim, do you not?

A. Well, yes, you can get up there if you go the right way.

Mr. GRAY: That is all.

Witness excused.

626 W. CLAYTON MILLER, called as a witness on behalf of the plaintiff, being first duly sworn, testified as follows:

Direct examination.

By Mr. GUNN:

Q. Your name is——
A. W. Clayton Miller.
Q. W. Clayton Miller. Where do you reside?
A. Spokane, Washington.
Q. You are a mining engineer by profession?
A. I am.
Q. What training or education did you have to qualify you for your profession?
A. I graduated in the University of Michigan in 1881, taking all of the mining courses, studies, then given; there was no mining degree given at that time in that university, and I began my mining experience proper in the fall of 1885.
Q. How constantly have you followed your profession since you finished the course in the University of Michigan?
627 A. I did not follow mining particularly, except incidentally, up to 1885. From 1885 until the present time continuously.
Q. In what parts of the United States?
A. I have examined mines and investigated conditions in British Columbia and all of the western states, that is, in California and Oregon, and Montana and Idaho and Nevada and British Columbia principally, some in Michigan in the early days.
Q. And in Idaho?
A. Idaho practically continuously since 1885, although for ten years I was in general practice throughout the general western country.
Q. And your experience has been principally that of quartz mining.
A. Principally, yes.
Q. And how long have you been acquainted with the district known as the Cœur d'Alene mining district in Idaho?
A. The south side of the Coeur d'Alene district, the quartz district over here, since 1886.
Q. Have you been connected with the operation of any
628 properties in this district, and if so, what properties and for how long?
A. I have been connected directly with the management of property since 1893 both in the Wardner district and Mullan district and in the Canyon creek district, also operated prospects for development in other sections of the district.
Q. And in what capacity has your connection been?
A. From consulting engineer to assistant manager and general manager.
Q. You are acquainted with the property involved in this litigation?

A. I am.

Q. Have you examined and studied this property with a view of enabling you to testify in this case?

A. I have.

Q. I wish you would turn, if you will, please, to plaintiff's map exhibit 1, and state generally the workings embraced in the examination and study you have made?

A. I have examined the workings on the Stewart vein proper from what is called the apex workings on the northerly portion of the Senator Stewart Fraction down through the various workings to the fir tunnel and down through the various workings
629 also to the Frank and May and Gray ore bodies in the Ontario in controversy herein. I have passed from the fir tunnel upwards to the apex workings mentioned, passing along the various raises and stopes and up the raise 4 east to where it broke through to the surface and where it showed the top of the vein and apex of the vein at that point some short distance below the surface timbers

Q. Have you followed and examined the workings in a southerly direction from along the line that you have described into the workings beneath the Ontario.

A. I have.

Q. Directing your attention to the workings which you have examined and studied, that is, workings on what has been referred to in the testimony as the Stewart vein, easterly of a line at right angles to the south side line of the Senator Stewart Fraction drawn through the top of raise No. 2, and I will ask you how many veins you find disclosed in those workings?

A. I have found one vein.

Q. And then, as I understand, the workings in the Ontario and the workings beneath the Stewart property are upon the same
630 vein?

A. They are.

Q. What evidence is there that satisfies your mind that the ore bodies in the Ontario are on the same vein or part of the same vein as the ore bodies in the Senator Stewart Fraction claim?

A. For the reason that you can pass from above to the two ore bodies in the Ontario down on ore and on vein, on the one vein, or you can pass from either one of those two ore bodies in the Ontario upwards to the Stewart vein, to where the two fractions or portions of the vein below join above, somewhere above—about forty feet above the three hundred foot level.

Q. Attention has been called to a fault displacing the Frank ore body from what has mentioned in the testimony as the Gray ore body and referred to as the No. 11 fault?

A. That is the 200 foot level, I should have stated. What is your question now?

Q. I say, attention has been called to a fault referred to as the No. 11 fault displacing between the Gray ore body and the Frank ore body all that go under that westerly?

631 A. That is what I was referring to you could pass around in two ways from one ore body and from the other ore body to where the vein was unseparated above the 200 foot level.

Q. What have you to say regarding any connections on ore between the vein disclosed in the Senator Stewart Fraction claim along the line that you have described and the ore bodies in the Ontario?

A. You can pass continuously through drift and raise or winds and stope from the northeasterly portion of the vein as shown in the Senator Stewart Fraction downward and into the ore bodies in question in the Ontario.

Q. Are you able to locate the apex of this ore body with reference to the surface lines of the Senator Stewart Fraction claim?

A. Yes.

Q. Please point it out along the map, if you will, or referring to any of the maps in evidence here.

A. Down the westerly portion of the apex drift at a point marked therein as "W-2" I have only seen the top of the vein, apex of the vein, at two points, namely at that point — at the point of raise 2 west where it comes up under and is terminated by the fault
632 called the Clancy fault. Thence going on easterly the top or apex of the vein is discovered at a point just under the top of raise No. 4 east and going on easterly again the apex drift which follows the footwall portion of the vein encounters the Osborne fault at a point marked on this exhibit 1 as "W-prime." There the drift turns sharply to the right and leaves the Osborne fault. Thence you can follow down on the vein through raise 4 and easterly along what is called east No. 3 on this map until we encounter the top of raise 218 east. Just before we reach the top of that raise in this east drift the ore and vein disappears underneath the floor of that level and cuts diagonally across the angle as indicated on this map and follows down this raise, the ore at one time going beyond and to the northeast a little of this raise on account of this bend. As we follow down under this fault there or along the fault, it is not under the fault, the apex of the vein in the top leaves this raise just prior to reaching the 200 foot level, and again cuts upon it to the southeastwardly and follows along above the 200 foot level, and is next seen some forty or forty-five feet as I recollect it, down
633 raise 314 east, this raise starting on the 200 foot level and following down the Osborne fault, which at that point is quite steep. This raise follows down into the stopes—into the 300 foot level where the apex of the top of the vein under the fault again breaks sharply to the right, in a curve to the right, and is seen next at a point about twenty feet westerly of the east breast of the east 300 foot drift. Where it is next seen is on the fir tunnel level, below that on the easterly drift almost directly underneath this point and near the breast of that east drift, I cannot read those survey numbers.

Q. What, if any, difference is there in the structural features of the vein as it is disclosed along this line of apex that you have described and the structural features of the vein beneath the Stewart in the Ontario to the south?

A. There are no differences that I can see.

634 Q. You spoke about the vein terminating along the fault; what fault do you refer to?

A. In the easterly portion I have reference to the Osborne fault.

Q. Now, from your examination are you able to say whether or not the ore bodies or the section of the vein underneath the Ontario is on a higher or on a lower plane than the apex of this vein as you have described it in the Senator Stewart Fraction claim?

A. The vein or apex that I have described has a downward course into the ore bodies in the Ontario claim.

Q. On what lines with reference to the end line of the Senator Stewart Fraction claim?

A. Parallel or roughly parallel to the easterly end line.

Q. I want to direct your attention here to the model introduced in evidence as Plaintiff's Exhibit No. 15-A, and ask you whether or not that represents the situation of the vein with reference to the apex and the Osborne fault, approximately, as you have observed it in the ground?

635 A. I have not checked that model, but it has all the appearance of illustrating the facts as they exist and as I saw them.

Cross-examination.

By Mr. FOLSOM:

Q. Mr. Miller, in starting from the Frank ore body, what direction would you go to reach the highest point of the upper edge of the vein?

A. The highest point as shown here?

Q. Yes. I don't mean through the workings; just indicate with your pointer?

A. Well, you would follow the raise up to the west end of the 300 foot level, and then shortly to the east of that there is another raise going up to the 200 foot level, and from thence some short distance east of that there is raise No. 223 west, which goes continuously up to the old lower Stewart tunnel.

Q. Indicate on the map?

A. That is the way that I traveled at one time—and then easterly, the main workings along west of the shaft on the old 200 foot level are caved, and it is necessary, therefore, to go to the northerly branch of the old 200 foot level to get to the apex raise.

636 Q. As a matter of fact the general course of the vein is as verified, north 30 east, is it not, except in the immediate vicinity of the Osborn fault?

A. As the vein traverses northeasterly from the south side line of the Senator Stewart Fraction it runs roughly north 30 east until it begins to curve easterly or southeasterly.

Q. What distance from the Osborn fault does it begin to curve on the old lower Stewart tunnel level?

A. My recollection is about 120 feet.

Q. Southerly from the fault?

A. Southwesterly.

Q. The curve is not very great, is it, until you get in the immediate vicinity of the fault?

A. Until you get close to the Deering Crosscut I think it is called, the effect of the curve is not particularly noticeable.

Q. In going westerly from the Frank and May ore bodies, you are constantly climbing, or going upward, are you not?

A. You mean westerly?

Q. Westerly or northwesterly.

A. Oh. Yes, sir.

Q. In going northeasterly in the direction of the east end
637 line you travel practically on a level, do you not, for about 800 feet?

A. From the top of the Frank ore body you travel easterly, northeasterly to reach one point of the apex.

Q. I am not asking about the apex. I say, you travel practically on a level until you get within a short distance of the point that you call the apex crossing the east end line of the Stewart Fraction?

A. Well, you can travel along the 300 foot level, yes.

Q. You can travel on the level for practically 800 feet?

A. The level itself has only naturally a water drainage, if that.

Q. Does that level correspond practically with the course of the vein for this distance; substantially, I mean?

A. Substantially.

Redirect examination.

By Mr. GUNN:

Q. Mr. Miller, calling your attention to Plaintiff's Exhibit No. 2 and the stopes as shown upon that map, I will ask you whether or not those stopes indicate to any extent the turning or curva-
638 ture of the vein as it goes toward the fault?

A. It shows it very markedly on the 200 and 300 foot levels from the points north and east of the south side line of the Stewart Fraction.

Q. I will ask you whether or not the 300 level to which your attention was directed by Mr. Folsom is parallel to the end line of the Senator Stewart Fraction claim?

A. No.

Q. And what is the course of that level with reference to the line of the cross sections No. 4 and No. 6?

A. It is more southwesterly.

Q. And forms an angle with the line of those cross sections?

A. It does.

Witness excused.

639 WILLIAM BEAUDRY, after being duly sworn as a witness for Plaintiff, testified as follows:

Direct examination.

By Mr. DINES:

Q. Please state your full name, residence and occupation?
A. William A. Beaudry, occupation superintendent of the Stewart Mining Company; residence Kellogg.
Q. How long have you been superintendent of the Stewart Mining Company?
A. About two years and one month; two years the 1st of January.
Q. That is the 1st of this present January?
A. Yes.
Q. Then you went there in January, 1910?
A. I was employed by the Stewart Company prior to that time as foreman.
Q. Were you employed by the Stewart Mining Company prior to that time that you became superintendent?
A. I was, as foreman, for approximately seven or eight
640 months.
Q. And what mining operations have you been superintendent of during the period of time that you have named, two years?
A. Well, approximately all the workings below the old lower Stewart tunnel level, and a part of that.
Q. Prior to your becoming superintendent, what capacity did you serve in?
A. As foreman.
Q. Of the same property, the property that is involved here in this litigation?
A. The same property.
Q. How long were you foreman?
A. From April, 1910, until January, 1911.
Q. What experience had you had before your employment with the Stewart Mining Company, in conducting underground mining operations?
A. I was employed as a timberman for approximately one year.
Q. With the same company?
A. With the same company.
Q. Prior to that time had you had any experience in mining?
A. I had no experience prior to that.
641 Q. How long—what period of time——
A. I will correct that. You see the company's mines closed down for approximately two years and a half, and so that year that I had reference to was the year before they closed down, so that was approximately in 1906 or 1907, I believe.
Q. How many years altogether have you known of the mining operations conducted in the Senator Stewart Fraction, the Senator Stewart lode mining claims?
A. I think about since November, 1906.

Q. Do you remember how much development work had been done upon the Senator Stewart Fraction claim at the time you first were employed there?

A. I do.

Q. Please state to the court briefly and in a general way what were the conditions in 1906 when your employment began?

A. The lower Stewart tunnel level was complete to a point between survey point 9511 and survey point 9512 on what was called at that time the south crosscut, and to the point between 9545 and 9546 in what was known as the Deering Crosscut, and to a
642 point between 9536 and 9537 in what is known as drift No. 2, old Stewart tunnel level, and at the point 2102 in drift No. 1 east. The old Stewart tunnel level was approximately to point 2106 in drift No. 2 west, lower Stewart tunnel level, and there was some work done in what was known as the Samuels raise; there was some crosscutting done on the 85 foot level, and there was some work done on what is known as the 180 foot level in the same raise, and almost all that upper Stewart level was complete at that time, all except a few feet, probably that has been done since, and all the rest of the work I believe has been done since I have been acquainted with the Stewart Mining Company.

Q. Were you at work on that when any work was done in this drift No. 1 east and drift No. 2 east?

A. Well, I was not acquainted with it, you might say, hardly any of this work in the drift No. 1 till that point I mentioned, I believe, point 2102.

Q. Was any of this stoping work done on what is designated as the 35 level in the westerly workings?

A. There was some work done on that.

Q. What was the general direction of the vein that is shown in the stoping on the 35 foot level; what was its general course?
643 A. Its general course was approximately east and west.

Q. And what was its dip?

A. Its dip varies from I believe on the west end here—it was pretty hard to get a true dip, and it was very flat, but going easterly in some places it was almost vertical, and from that to 45, southerly.

Q. Now, please state to the court whether or not the workings on the level indicated as the 35 foot level, and the drift No. 2 west and No. 1 east, shown in the westerly part of the Senator Stewart Fraction, were on the same vein *that* the workings in the easterly part and covered by a line drawn parallel to the end line through the point "W" east on Exhibit 1?

A. There is no connection; nothing to show that they are.

Q. Was there any work done during the time that you were employed there to see if those veins were the same?

A. There was some work done in the top of these stopes here, some crosscutting and prospecting.

Q. What did the crosscuts that you drove show, and how did you drive them?
644 A. We drive crosscuts out different ways in the top of the stopes above old lower Stewart tunnel level, and we never found anything in any of them.

Q. How about the old lower Stewart tunnel level itself? Was that a crosscut?

A. What was a crosscut. Deering Crosscut was a crosscut.

Q. What was shown in the Deering crosscut?

A. Where I have seen that Deering crosscut it was practically in barren country rock.

Q. What was shown in the upper Stewart level?

A. In the upper Stewart tunnel level was country rock till it got within—well, where I have seen it, it was in country rock, except that they had some ore up above about point 9566 to 9564, I believe, and also easterly—well, I should say between 9567 and 9569.

Q. Now, what was shown down in here to the southerly of the western workings to which I have just directed your attention?

A. Southerly on that upper Stewart tunnel level is shown a heavy gouge, which was called a fault, and I believe it has been known by some people or called the Ontario fault.

Q. Was there any stoping done in this southern portion
645 up against that gouge or fault as you have designated it?

A. There was; from the old lower Stewart tunnel level a stope was run a little easterly of what was known as No. 10 raise; the stope was run till it terminated against this Ontario fault.

Q. How did the vein terminate there; did it lie over on the fault or did it come down under the fault?

A. It came down under the fault.

Q. Where your stoping was done—what was the dip of the fault at that place?

A. I don't know; I never took no dip of it. It dipped westerly.

Q. I call your attention to the stope map, Plaintiff's Exhibit 2. Are these the stopes that you referred to?

A. They are.

Q. Now, please explain to the court whether that ore lay up over the fault or whether the fault dipped the other way and the ore was stoped up under the fault—I am referring to the stope on Exhibit 2 immediately above the most southerly point or face of the old lower Stewart tunnel?

A. The stopes terminated under the Ontario fault and very
646 nearly Plaintiff's Exhibit No. 2 shows the cut of the ore almost as it was according to my recollection. You can see there that there was probably five feet or so on every floor, which is approximately seven feet of a raise, that the stopes went northeasterly.

Q. Now, directing your attention to the workings that are shown easterly of the line to which I call your attention, please state on what veins those workings are made and driven?

A. The workings were driven on what is known as the Stewart vein.

Q. Are you familiar with the workings in the Ontario Claim as shown on Exhibit 1?

A. I am.

Q. What bodies of ore have been developed underneath the Ontario and extracted?

A. There has been a stope called the Gray stope extracted from the Silver King tunnel level above what is known as the Gray drift; the ore has been extracted to the 300 foot level of the Senator Stewart, and the Frank ore body, that is southwest of the Gray ore body, has been extracted also to a level with the 300 of the Senator Stewart.

647 Q. To what vein if any do those ore bodies under the Ontario surface belong?

A. To one vein, to that of the Stewart vein.

Q. How do you know that they are a part of the Stewart vein?

A. By different work that has been done upward on that vein, which leads to the Stewart vein.

Q. Do you know where the top or apex of the Stewart vein as it approaches nearest to the surface of the ground lies within the boundaries of the Senator Stewart Fraction claim?

A. I do.

Q. Please designate to the court the topmost portion of that vein?

A. The topmost portion or highest portion of that vein is shown about between 20 and 30 feet below the collar or top of the apex raise, about 35 or 40 feet above the apex drift.

Q. Trace it on?

A. Then the top of the vein is shown near point 2532 in the west apex drift, where it terminates against what is known as the Clancy fault, and the apex or top of the vein is next shown easterly, between point- 2566 and 2502 in the east portion of the apex

648 drift. It is next shown on the old Stewart tunnel level in what is known as the east No. 3 crosscut. It is shown between points 2512 and point 2571, and then it is shown nearly all along that crosscut to a point between survey point- 2549 and 2584. Then we see the apex in about 50 feet in what is known as raise No. 218 east, and then we see it continually for a distance of about 20 feet, and then the ore or the vein seems to go above the 218 raise a short distance, due to this curve in the raise here. Then we follow it again for a distance of about, I should say between 80 and 100 feet, and the ore gradually leaves this raise easterly, and we see the top of the vein again at a point approximately 30 feet beyond the bottom of 218 east raise. We see the top of the ore at that point, that is, I have seen it as the drift was being run. We followed the ore as it came up, varying from four feet up in the drift, and gradually kept coming down as we went easterly till today, by picking in the bottom of this east drift, 205 east drift, you can disclose the vein, but you can't see it in the top of the drift because it never reached the top. Then we see the apex of this vein in raise No. 314 east. That raise was run on the true dip of the vein. I

649 took extra precautions to run that raise myself so that I was sure that it followed the true dip of the vein, and I followed the true dip of the vein up approximately 30 feet till the ore terminated against what in known as the Osborne fault. All the ore below this raise has practically been stoped at present out almost to the top of the ore. I could draw a line probably from that where

the ore is at the present day. It goes to a point probably about 50 feet easterly of raise 314, and then it gradually goes to the bottom of this 300 east drift, the same as it does on the 205 east drift. Then you next see it in the Fir tunnel, or what is called the 415 East drift on the Fir tunnel level, and the ore there is shown in the face of that drift terminated against the Osborne fault at the top; you can see where the pay ore terminates against the Osborne fault; beyond that there will probably be a little vein above that, a little bit, but I would not be prepared to say.

Q. Does the apex follow on around until it crosses the end line of the Senator Stewart Fraction?

A. It follows on around until it crosses the end line of the Senator Stewart Fraction.

650 Q. Point out to the court what you actually have seen yourself about that?

A. I saw that it crosses the Senator Stewart end line approximately 30 or 40 feet above the 300 foot level.

Q. Can you trace it on easterly until it crosses the side line of the same claim?

A. Easterly the stopes as marked from the old Stewart tunnel level till the vein was so poor that it did not hardly pay to operate, and from the top of that stope numerous raises were run to what is known as the Clancy fault. There was a raise run between—I think I could refer bet*we* to the stope map.

Q. Refer to Plaintiff's Exhibit No. 2 if you prefer?

A. There was a raise run approximately I should say about 150 feet westerly where we last see it in the apex drift, to what is know as the Clancy fault, but I never got to see that point very clearly, as it was done on the night shift, and when I got there the raise we had run had caved in, as the Clancy fault generally has water, and the rock is very soft around it, and it has sloughed in, and I did not get to see that point, but I saw a point about 150 or 200 feet west of that where I got a good view of the Clancy fault,

651 directly above what is known as No. 9 raise. Then we see the top or the apex of the ore in a stope that was run about 30 feet east of the side line of the Senator Stewart Fraction, or the line separating the Senator Stewart Fraction from the Senator Stewart. The Clancy fault was open at that point for a distance of about 20 feet I should judge, and we crossed the Clancy fault at that point for a short distance, probably between 10 and 20 feet, and the rock is very loose, in fact there were crevices on the other side of the Clancy fault that I could shove my arm through, which at that time lead me to believe that I was either near the wash or not very far from the surface.

Q. How far were you in fact, from the surface at that point?

A. We found out after that that that was about 68 feet from the surface, between 68 and 70 feet.

Q. Next?

A. Then we see the top of the ore where it terminates against the Clancy fault right on the line, the south side line of the Senator Stewart Fraction.

Q. In what working is it shown there?
A. What is known as Raise No. 2 W.
652 Q. Now about how many feet are in that raise as it goes up on the incline?
A. You mean the distance of the raise?
Q. Yes.
A. I think that raise is 114 feet, perhaps more than that, in elevation; it is about 114 feet in elevation, I believe; I forget the exact distance.
Q. In what portion of it do you find this fault?
A. In the top.
Q. How far is that from the surface of the ground above that raise; how far were you from the actual surface?
A. Well, that would be about 70 feet; approximately 70 feet.
Q. Did the raise show the vein?
A. The raise showed the vein.
Q. What was the character of the vein as it gradually approached the highest point that it was disclosed in that raise?
A. The vein was very small and low grade ore in it.
Q. Now what was the character of the vein that was disclosed in the top of these stopes as you go on to the northerly and
653 westerly?
A. It was practically the same; it gradually got poorer as we came to the top.
Q. Stoping was done all through this property shown on Exhibit 1, easterly of the upraise to which you refer, and shown on this map?
A. Stoping was done to within a point 15 or 20 feet from the apex drift.
Q. What was the character of the vein as shown in the apex of those stopes and immediately adjacent and nearest to the apex drift?
A. The ore was very low grade. Some places the vein was wider than others, but the values seemed to terminate in the vein.
Q. What is the apex drift driven on?
A. It is driven on the vein.
Q. Does it follow either wall of the vein, and if so, which wall?
A. It follows the foot wall of the vein.
Q. Does the Osborne fault at that place form the footwall of the vein, or is that the natural footwall of the vein?
654 A. That is the natural footwall of the vein, till you get to the point 2502, and then the vein seems to turn, and for a short distance the Osborn fault forms the footwall of the vein.
Q. Is that work of driving that apex drift still in progress?
A. It was until a day or two ago.
Q. What is shown in the face of that drift to the easterly?
A. There was vein material in it the last I saw of it.
Q. How wide is the Stewart vein at that point in the apex drift?
A. It is pretty hard to say. I know that it is approximately between 40 and 50 feet. I know of 30 feet in different places.
Q. How do you know of 30 feet; what is there that — to show you that it is 30 feet at that point?
A. Well, I have worked stopes in places as wide as 60 feet.

Q. What development is there now?

A. There is a crosscut in the apex drift opposite point
655 2519, turning southerly, which encounters vein material approximately 30 or 35 feet from the hanging to the foot wall.

Q. Is that crosscut a crosscut on the vein towards the hanging wall?

A. It is.

Q. Is the hanging wall disclosed in its face?

A. Not yet.

Q. And what is the entire length of that crosscut?

A. I believe it is 30 feet east; 30 or 35 feet, I forget which.

Q. What is the character of the vein material that you find in that crosscut?

A. Well, it is mostly of a low grade carbonate ore.

Q. Compare it with the character of the vein as you find it at other portions of the top of it exposed, and how do they compare?

A. It is very similar, almost the same. I could not see any great difference between it and in the places that I have seen it.

Q. In driving on the vein to these different points where you say you came to the apex, did you go up on the natural or true
656 dip, or did you select arbitrary lines to go up on from the lower portions of the vein as it lay in the earth to the highest portion?

A. We generally tried to go up on the true dip. Of course sometimes we have to change the direction of it on account of the condition of the ground; if we come to a bunch of ore that is too low grade to mine, we will probably leave it, and it may cause the stope to turn a little more or less.

Q. Now, in such portions of the top of the vein as you find it in immediate contact with the Osborne fault on the east end line, is the vein there oxidized, or is it galena, commercial ore?

A. It is galena, and mostly commercial ore.

Q. Is the vein as you find it against the Clancy fault at the point that you designate where it is against that fault, oxidized, or does it contain galena or commercial ore?

A. The vein between point 2532 and 2543 in the apex drift shows galena.

Q. And how is it at the point that you find the fault in the upraise No. 2 W, is it oxidized?

A. It is not.

657 Q. What is it, galena there?

A. It is galena.

Q. Now, in the other portions of it where you have found the apex not in contact with the fault, you find it oxidized, do you?

A. We do.

Q. Were you in actual charge of the underground operations as you were working on the vein and found the top of it lying against the Osborne fault?

A. I was.

Q. Please point out such portions as you actually conducted those

operations, and tell the court how you went up to that point of the apex and on what angle, and how you know that to be the apex?

A. Well, as we stoped upward from the 400 or Fir tunnel level, we stoped up approximately 30 or 40 feet above the 300 level to where we encountered the apex across the end line of the Senator Steward Fraction. The ore was—the vein was probably between 10 and 2% or 30 feet in, I should think, and as we got near the Osborne fault at that point it gradually terminated and pinched out against the Osborne fault. As we stoped westerly, about every third—

658 or probably every second or third sett we would probably raise one sett further before the ore would terminate against the Osborne fault, and so on, till we got to the 200 foot level, and from there the stopes on the 200 foot level done practically the same thing as we raised upward on the true dip of the vein, about every second or third sett as we went along, we would go one sett higher on the vein, and so on to the 100 foot level; then we worked above the 100 foot level approximately five floors, which would be approximately 28 to 30 feet above the 100 foot level, and at that point there was still low grade ore left in the vein, and some places there was still commercial ore, but not very much of it, and the chutes that we were extracting the ore with practically closed in, and I did not think at that time it was practical to raise new stopes for the little ore that was left there, but I think the work that has been done since then—that that ore will be eventually stoped continually up to the Osborne fault till we get to the level of the last No. 3 crosscut. In the stopes above the old Stewart tunnel level—I can refer to that better on Exhibit 2—I stoped that continually up to the apex drift at that tpoint. Of course we never encountered the Osborne fault in these

659 stopes, because of that fold which is in the ore which has been referred to before, but the vein was small and thin between these stopes southerly and those northerly so that there is a good area of ground there that probably will, part of it, be stoped yet, but some probably is not rich enough to be worth while to stope. At that point we did not encounter the Osborne fault or come to the apex drift at that point referred to before between point 2566 and 2507.

Q. Now, I will ask you, Mr. Beaudry, please to look at the model which is designated here at Plaintiff's Exhibit 15-A, and state to the court whether or not that appears to you as a correct representation of the way the vein rises to what you call its apex and what you call its apex in that model?

A. It does. To my mind it is as good a picture of the ore as I have seen it in the operations of the stopes as I could picture it out, as near as my memory goes the vein is located in that approximate same position against the fault.

Q. Directing your attention again to the model, how did you approach in mining the point that is shown by my pointer on

660 the first glass or cross section that is shown as the red comes up to the blue at its topmost point, how did you approach that point in your actual mining?

A. We approached it with a drift known as 415 east. At that

point the hanging wall of the pay ore, I believe, from my recollection, was about at the dip of approximately 35 degrees southerly, and the fault, I believe something like 55 or 60, somewhere along there.

Q. Have you mined up to that point shown on there—that is, I will call your attention to the fact that the first cross section is over here?

A. No, there is no stoping above that floor, no ore above that.

Q. Are you familiar enough with this to identify the different cross sections?

A. I am.

Q. On the model. Take the second cross section from its face, was there stoping done on that?

A. I would like to have that tracing put over exhibit 1, so that I could exactly locate that on the map.

Q. This is the tracing referred to, Plaintiff's Exhibit No. 15-B?

661 A. Yes. I have put it on a little too high, but that makes no difference.

Q. I think you will have to change that around. I think that is the dip of the Osborne fault?

A. I never saw this tracing before today.

Q. I think you have it just reversed, if my idea is correct.

A. No, that was right the way I had it.

Q. Now, the question I want to ask you about that is, taking the third cross section of the model, Plaintiff's Exhibit 15-A, if you can recall by reference to Exhibit 15-A and assisted by the cross section lines on Exhibit 15 how you did the actual mining on that section?

A. That is the second plate in there?

Q. No, the third one.

A. The stope was run from the 400 or Fir tunnel level on its upward course to a point approximately about 35 feet above the 300 foot level, and at that point the stopes have not reached the top of the ore yet.

Q. Now, did you go, in mining that in your regular course of mining, upward to the apex or downward?

A. We went upward.

662 Q. And how would you go from the points of the line of apex as outlined by you to get to the bodies of ore on this vein in the Ontario?

A. Downward.

Q. Now, speaking of that model generally, do you think that that correctly represents it as you have found them in your mining operations in the ground?

A. It does.

Q. It is a fair representation of it?

A. A fair representation as near as I could express it.

Q. On that model state what you understand the red lines and the blue lines to represent?

A. I understand the large blue line to represent the Osborne fault, and the red is the vein as it was mined, and what is left that is not mined. Of course some parts of it is not quite stoped out yet. Those blue lines in the other direction at the top there, some of

them represent the Clancy fault, and there is a few of them, I believe—well, where the plate is cut up here represents the surface of the hill at that point.

Q. And the small blue lines?

A. The Clancy fault.

663 Cross-examination.

By Mr. GRAY:

Q. Just point out to the court the thirty-five level?

A. (Witness indicated on map.)

Q. Did the ore on that level ever reach down to a point on the Stewart tunnel level?

A. It did.

Q. Where?

A. In drift 2 east.

Q. Just give the place?

A. The commercial ore reached the tunnel level between points 9536 and 9538.

Q. And extended along that drift?

A. The vein reached the tunnel level further west than that, but it was not commercial.

Q. Where?

A. Well, it reached the tunnel level at approximately near point 9535.

Q. Any place else?

A. And there is a seam which I would identify as the vein near point 9505.

Q. Those are the only places?

A. The only places that I have seen.

Q. Now, where is the Samuels raise; point to it; it is

664 over there in these workings from the——

A. It starts from the old Stewart tunnel level and raises up until it reaches the upper Stewart tunnel level.

Q. You run out an intermediate there called the 145?

A. I did not run that; I was there when it was run.

Q. Have you been in all parts of that intermediate?

A. I have.

Q. Did you see any quartz or galena on that level in that intermediate?

A. Which one do you mean—185?

Q. 145.

A. I have taken out some ore from that.

Q. Where through there was there any quartz or galena disclosed.

A. I do not know a point in that level.

Q. Practically throughout the level?

A. Well, it is practically from this point here, I should say to a point where it shows Samuels raise.

Q. From the northern point on the level to the point marked with the red pencil by you; mark that a little heavier?

A. I want to correct that. There is some places that the
665 ore, commercial, did not reach the level; there was ore above that.

Q. Yes, sir; just mark right along there.

Mr. DINES: I would like to have that identified.

Mr. GRAY: That is the red line along the 145 level.

Mr. DINES: What he means to say is it did not show.

A. It did not show in all places on the level, but there was some ore in different places above that level that I have seen approximately the distance that I made that red line.

Q. And point to the end of the "D 2 E" drift on the old Stewart tunnel level.

A. (Witness indi-ated).

Q. Did you ever see a strong gouge near the end of that level?

A. I never saw the end of that level.

Q. Never have?

A. No, sir.

Q. How close to the end have you come?

A. I have seen different places along this level, but it seems that this level caved in. I was framing timbers outside.

666 Q. How near to the face of that level did you ever get?

A. I have been to point 9539, I believe.

Q. Is there a winze sunk any place from the upper Stewart tunnel which is now accessible?

A. A winze in this——?

Q. Any place in that upper Stewart tunnel?

A. There was a short winze above this point.

Q. Mark it?

A. It is between point 9569 and survey point 9570.

Q. About where that little working is running east from the level?

A. Yes, sir.

Q. Was there any other winze from that level?

A. There was another winze which was run—which connected with the Samuels raise. As I said before, I made a little error in saying the Samuels raise connected with that upper Stewart tunnel for it did not; it run up I believe 185 feet and then it drifted for a short ways until they come to a winze that was sunk, I am pretty sure, that is the winze right there, between 9568 and 9571.

Q. Was there any other winze?

667 A. I know of no other. I was not there when that work was done. I was just in the winze and that was all, although I have done a little work in the bottom of this Pierce winze down here.

Q. Is there a fault in that mine that you know as the Deering fault?

A. There was a fault I believe it was called the Deering fault, Mr. Clancy pictured it out to you here.

Q. He has given it the name of the No. 5.

A. I believe so, yes.

Q. Will you please describe the position of the ore in that fault on and immediately above the "D 104 intermediate?

A. Well, the stopes went up from the 100 foot level and after stoping the vein upwardly to, say, approximately fifty feet, some places a little less, that is, near the cross cut it was less, the vein turned very flat and we followed the vein where it was very flat and then it——

Q. (Interrupting.) That is represented by the green there?

A. It does not show on this map, but it turned flat before
668 it got to the green, and turned downward before it got to this green; then that stoping was stopped at that point; then there was a chute they run from—there is a little crosscut here which is not numbered.

Q. On the 100 foot level?

A. On the 100 foot level.

Q. Running about parallel with the shaft?

A. About parallel. There is also a vertical raise under this point.

Q. That is, under point R 100-C.

A. Under point R 100-C; and a chute put into that, and then there was a level cut along this, then they stoped the other way.

Q. Along this, you mean the D 104?

A. Along that intermediate referred to?

Q. Yes, sir.

A. Then the ore was stoped upwardly until it met the other stope; the ore was going up on its southerly course, and then it was stoped the other way on its northwesterly course until it reached the old lower Stewart tunnel level.

Q. Now, point out upon the exhibit to the court those
669 stopes—just above the 100?

A. These stopes just above the 100 are the ones that went up westerly and stopped at this long stope; there may be some work there that is not practically up to date; Mr. Clancy, I cannot say whether he was there at that time or not, but I think he was. Then these stopes were worked from this direction southeastwardly until they met that stope there.

Q. That is, the red stope within the green was worked along down until it met the stopes that you had carried up from the hundred foot level?

A. Yes, sir.

Q. How did the fault appear through there? How did the ore come up to the fault; about where through there did the fault run?

A. I should say that there is a fault runs—there is no point I could identify it.

Q. Does this blue line pretty well represent it that Mr. Clancy has marked?

A. Very close.

Q. How did the ore come up to the fault?

A. It just came up and turned.

670 Q. It just came up and turned downward in its course westerly?

A. It did.

Q. And then how about coming down to the fault, how did it do?

A. It just laid right on the fault at that point, and then the other ore came right up against it?

Q. Laid level from the fault going westerly from there?

A. I could not say it lay level; it was very irregular; some places it might lay level and some places it might be steeper.

Q. There was some gouge along there, was there?

A. There was some gouge, yes, sir.

Q. Did the ore meet on the east side of that fault the ore coming down on the other side?

A. It did.

Q. Did I understand you to say that you endeavored to run your raises on the true dip?

A. Not all of them; some of them was run on the true dip. This raise marked 314 I took extra precautions to run that raise on the true dip of the ore.

Q. It was your endeavor to run all of them on the true

671 dip as nearly as you could in your mind?

A. No; some of the raises I would run them so as to make the nearest connection; for instance this raise here was done——

Mr. DINES: State what that one is?

A. 218 east raise was run for the purpose of saving work or saving some drifting so we would not have to spend more unnecessary money.

Q. How about the other raises throughout the property?

A. The other raises are run practically as the ore happened to be in those places.

Q. On the dip of the vein?

A. Sometimes they were on the dip and sometimes they varied. The dip of the vein is not very regular in any place.

Q. There was a raise I want to ask you about, raise 400 right there south of the shaft; do you know where that is? There was such a raise, wasn't there? It would be right under this 300 working?

A. There is some little raises there at present, but I don't know which one you mean.

Q. Wasn't there a raise that you called the raise 400 just

672 south of the shaft shown on the 400 level here?

A. There was a vertical raise at that point run for the purpose of getting the ore down from the 300 foot level; it was run almost vertically until it hit the bottom of what was known as the winze at that time. We were dumping the ore in the winze and hoisting it up to the 200, and when the fir tunnel was completed to nearly a point under that winze we run the raise through so we would not have to hoist the ore, so we could gob it down instead of raising it?

Q. Was that raise entirely within the vein?

A. It was in vein material.

Q. The lower portion of it, was that in the vein?

A. It was in the vein.

Q. Can you now recall that?

A. I can recall seeing specks of galena in it.

Mr. GRAY: That is all.

Witness excused.

673 FRED T. GREENE, a witness called on behalf of the Plaintiff, being first duly sworn, testified as follows:

Direct examination.

By Mr. GUNN:

Q. Your full name, Mr. Greene?
A. Fred T. Greene.
Q. Where do you reside?
A. At Butte, Montana.
Q. Have you a profession, and if so, what is it?
A. My profession is that of a mining engineer and mining geologist.
Q. What education did you have to qualify you for your profession?
A. The full mining engineering course at the School of Mines of Michigan at Houghton, Michigan. I graduated there in 1897 with the degree of Bachelor of Science and Mining Engineering.
Q. What experience have you had since your graduation in the line of your profession and in what sections of the country?
674 A. Since that time I have been continuously employed as mining engineer or mining geologist by companies in Butte, in British Columbia, and for the last six, or rather, from six years ago until the fall of 1908 I was in the employ of the Great Northern Railway Company and was examining mining properties and mining countries in the northwest. Since September 1908, I have been in private practice with offices in the city of Butte, Montana.
Q. To what extent have you become familiar or has your experience connected you with the mining operations and mines in the Cœur d'Alene mining district or Wardner district?
A. I came into the Cœur d'Alenes first while I was in the employ of the Anaconda Copper Mining Company, in Butte, Montana, and examined some of the mines here at that time, those around Mullan; later in 1906, after leaving the Anaconda Company I made a general examination of the whole Cœur d'Alene district for the Northern Pacific Railway Company. In 1909, in January, I went with the Federal Mining & Smelting Company and was engaged for them in developing a suit which was then pending with the
675 Bunker Hill & Sullivan Company, at Wardner, over certain apex rights that were in contention at that time and continued with them until April 1910. Since that time I have spent a great deal of time in the Cœur d'Alene district examining mostly all the producing mines and particularly the Stewart and the Caledonia mines.
Q. When did you first become acquained with the Stewart property?
A. In the spring of 1909, but at that time not in detail, and it was not until the late summer and fall of 1911 that I made a detailed study of the Stewart property and spent several weeks in that study.
Q. And referring you to plaintiff's exhibit 1, I will ask you to

explain generally the portions of the property and the workings of the property which have come under your observation and study?

A. At the time I—at the time of my first detail examination of the Stewart mine the mine operations were confined to the area above the No. 2 level, and at that time the major portion of the mine was accessible and could be studied in detail. Do you desire me to go into that detail?

676 Q. No.

A. In those workings I found a vein——

Q. (Interrupting:) I will ask you a question along that line, Mr. Greene. Has your examination extended to the workings shown upon this map beneath the Ontario claim?

A. Yes. My examination up to the present time includes practically all the areas shown by workings on that map, plaintiff's exhibit No. 1.

Q. Will you define a vein, please?

A. A vein is a mass of material within the earth crust which is differentiated from that crust either by boundaries or by a difference in the material contact.

Q. Are there different classes of veins, and if so, how are they classified?

A. There are different classes of veins. The veins known in this Coeur d'Alene district are denominated fissure veins and replacement veins and contact veins.

Q. And what is the distinction between a replacement vein and a fissure vein, or a contact vein?

A. There is also a difference between a fissure vein and a contact vein.

677 Q. Yes, sir.

A. But the difference between a replacement vein and a fissure vein is that i na replacement vein the mineralizing solutions in their course through a more or less porous mass of the earth's crust substitutes all the precious or valuable minerals for the country rock contiguous to this course that the solutions follow. In a fissure vein the vein is characterized as the filling of open spaces in fissures lying with an extended horizontal and vertical plane.

Q. And a contact vein?

A. And a contact vein may partake of both the characteristics of a fissure vein and a replacement vein, is usually along and is along the contact of two rocks, one a plutonic rock and the other possibly also a plutonic rock and a sedimentary rock.

Q. How do you classify this vein that you find in the Stewart property?

A. The Stewart vein is a replacement vein.

Q. Now, directing your attention to the workings on the map, and particularly the workings easterly or southerly of a line at right angles to the south side line of the Senator Stewart Fraction

678 claim drawn through the letter "W" on this map, and how many veins are disclosed in these workings?

A. One only.

Q. I wish you would describe generally that vein with reference to its structural features as you have observed it?

A. That vein is a replacement vein whose outlines are very irregular, whose plane is undulatory and in a few places disrupted by a minor fault movement. The vein is practically continuous throughout these workings and is identifiable always as one and the same vein.

Q. How do you identify that section of vein or ore bodies beneath the Ontario with the vein disclosed in the workings beneath the Senator Stewart claim?

A. The ore bodies under the—or from the ore bodies underneath the Ontario the vein can be followed continuously up to and under the Senator Stewart Fraction.

Q. You say the vein can be followed. What have you to say with reference to following ore from the Ontario along a course to the Senator Stewart Fraction?

A. The same.

679 Q. Now, I wish you would describe, if you will, the apex of that vein with reference to the surface boundaries of the Senator Stewart Fraction claim?

A. First I would like to use plaintiff's exhibit 3. In the general mining operation of the Stewart mine there were two very distinct boundaries met with on all the levels and in practically all the stopes. The first of these was, in order of history, I believe, to have been the Osborne fault, and it was found at the east end of both the old lower Stewart tunnel level, the 100 level, and later the 200 foot level, but at the time of my first examination on the old lower Stewart tunnel level to the east and the 100 foot level. That defined an eastern boundary to the vein. In the stopes above the old lower Stewart tunnel level a fault was met cutting the vein off very sharply and clearly at the top of these stopes, and no ore was found above that cut-off. That cut-off has been referred to and shown at a point approximately 705 feet westerly from the southeast corner of the Senator Stewart Fraction claim, and that cut-off is traceable to the northeast for 250 feet or thereabouts on a slightly bending arc which has a strike approximately north 35 east, I should say. From

680 this northerly point the arc continues to bend to the east, and from there for 140 feet or so the strike is about north 45 east. From that last point the bend increases and the arc followed until the eastern leg of that arc straightens and can be followed down through the mine in a direction approximately south 45 east. The eastern leg of that arc is the top edge of the vein against the Osborne fault. At every point along that arc or along that leg the vein departs from the Osborn fault in a downward direction. That has been traced out and followed very carefully by the various raises and drifts at the east end of the old Stewart tunnel level to the 100, to the 200, and 300, and the fir tunnel level. Raises have connected this up definitely placing it as shown on the map, plaintiff's exhibit 3.

Q. What, if any, difference is there in the characteristics of the vein as you observed it along the line or the vicinity of this apex and on the lower planes or levels down to the Ontario?

A. I neglected to say that one place the vein comes to the surface and shows the surface outcrop above what we call our apex
681 drift. In that apex drift the surface conditions prevail and the vein is oxidized and highly leached, and there is very little sulphide ore left there except where it has been protected by some overlying impervious seam. Otherwise the conditions throughout the vein are the same.

Q. Similar. State whether or not the section of the vein beneath the Ontario claim is on a higher or a lower level than the horizontal plane through the apex east and west as you have described it?

A. In every case it is lower; that is, in every case the plane—under the Ontario—is lower than our apex. That is what I understood you to mean?

Q. Yes, sir. I direct your attention to the model, plaintiff's exhibit 15-A, and ask you whether or not that is a correct representation of this vein as it is found in the vicinity of the apex and of the Osborne fault as you have observed them in the examination you have made?

A. That is a very careful graphical illustration of the vein as it exists in the Stewart claims today.

Q. What have you to say as to its being approximately correct?

682 A. It is correct.

Q. Have you made an examination of the stopes near the southerly side line of the Senator Stewart claim and above what is designated on plaintiff's exhibit 2 as the old lower Stewart tunnel level?

A. I have.

Q. What, if you know, causes those stopes to terminate as shown upon this map?

A. In a horizontal direction there is nothing that causes those stopes to terminate except the fact that the ore is very lean and is not mineable at a profit.

Q. State whether or not there is a fault found in that vicinity, and if so, what relation that fault has to the stoping?

A. On the 13th floor above this point which you mentioned there is a fault which at that point has a strike of north 17 east and a dip to the southwest of about 43 degrees, or a dip to the northwest, I should say, of about 43 degrees. That is seen and has been designated by myself and named by myself as the Clancy fault, and that cuts off the vein.

Q. Do you find in that locality in the Senator Stewart claim
683 a fault which has been referred to in the testimony as the Ontario fault?

A. Yes.

Q. Where is that fault located with reference to the stopes shown on this map above the old lower Stewart tunnel?

A. It is not indicated and it does not show in those stopes anywhere.

Q. Can you point out about where it would be with reference to the surface boundaries of the Senator Stewart claim?

A. Not on this stope map but on plaintiff's exhibit 1 the fault lies through station 2571 which is above the stopes outlined on plaintiff's exhibit 2.

Q. Is there any ore shown in the face of these stopes as you proceed southward, or the stopes at the end of the ore?

A. There is vein material and some ore which I do not believe is commercial.

Q. At what depth are these ore bodies that are known as the Frank ore bodies beneath the Ontario below the surface?

684 A. I do not know.

Q. You are not able to state that?

A. No; I could measure it up on the map.

Q. You might, if you will, if you can give it to us readily.

A. About 575 feet.

Q. Now, directing your attention to the workings in the westerly portion——

A. No, it is less than that. I will correct myself. I was giving it clear down to the Frank drift. Instead of 575 feet to the top of those stopes underneath the Ontario it would be—instead of 575 feet it would be 800 feet. I was using the wrong figure.

Q. What, if any, opening is there from the surface with the workings beneath the Ontario on these ore bodies referred to as the Frank and Gray and May ore bodies except through what is shown upon the map as the Silver King tunnel?

A. There is none other that I know of.

Q. Now, directing your attention to the workings in the westerly portion of the Senator Stewart Fraction and Senator Stewart claim, I will ask you whether or not there is any vein disclosed in

685 those workings.

A. In the upper Stewart tunnel there is a vein exposure which has been drifted upon for a distance of nearly 300 feet and upon which there has been some slight stoping. This drift I will say instead of being on a vein is on a fault, a very steep fault. Northwest of that fault is a flat vein and the ore that was taken out from that tunnel was taken out near the intersection of that vein and that fault. The ore was also stoped below the upper Stewart tunnel for a few feet. There are five or six setts, I believe, in there that are stoped down to or nearly to the 145 foot level. That ore was taken out at the intersection and slightly below the intersection of the rather narrow flat dipping vein and a very steep fault, both having practically the same strike.

Q. Is there any other vein disclosed in those workings?

A. None other.

Q. What, if any, relation is shown by any development or workings between any ore bodies or vein or veins in these westerly workings that I have called attention to and the main Stewart

686 vein to which your testimony has been principally directed?

A. I find nothing whereby I was enabled to connect up the two or identify them as being one and the same.

Q. I notice on your apex map that the apex as you have placed it curves, forms what you have referred to, I believe, as an arc.

Do you find any similarity to that curvature in the workings or stoping below? If so, point it out?

A. There is a similar curve, although not so great for the reason that the curves shown below are the intersections of the vein with the horizontal plane, whereas, the curve shown on the apex map is an intersection with practically three planes, with the surface, the Clancy fault and the Osborne fault which were not horizontal but steeply inclined planes. That same change of direction is shown on both the slope map and the plan map. That change is gradual, begins a long way to the southwest and in most cases follows pretty much the same arc.

Q. Give us, if you will, please, just a general description of the Osborne fault as you have observed it, stating its strike and dip and its general features?

687 A. The general strike in the Wardner district is about north 80 west. Its dip varies from around 48 degrees to the vertical. The Osborne fault is a long, persistent feature which had a marked effect on the topography and terminates practically every physical feature underground that I have followed up to its plane. I have seen it in Mullan or near Mullan, through the Mayflower mine, the Alice mine, the Sisters. I have verified the description given by Mr. Ransome in his report on this district as to its effect on the topography and I know it to be a long persistent earth movement.

Q. I wish you would state generally, Mr. Green, if you will, please, what there is about this vein shown in these westerly workings that convinces you that it is not the same vein as the main Stewart vein?

Mr. GRAY: I object. He has not said so. He said that there has not been any connection made by which he can say that it is.

The COURT: I think that is correct. I will sustain the objection.

Mr. GUNN: That is all.

688 Cross-examination.

By Mr. GRAY:

Q. Mr. Greene, what is the course of a vein?

A. The course of a vein is the direction it has in relation to some other thing.

Q. It is its horizontal direction, isn't it?

A. It might be and it might not.

Q. What is the strike of a vein?

A. The strike of a vein is the intersection of a vein with a horizontal plane.

Q. How do you determine the course of a vein, Mr. Greene?

A. What do you mean?

Q. The course of a vein?

A. By getting its average strike over a long—over the greatest length possible with that vein.

689 Q. Taking the course at any given point does not establish or show the course of the vein, does it?

A. It does not show the co-se of the vein necessarily, no.

Q. It would not be a fair method of determining the course of a vein, would it?

A. It is the only method that you can determine the course of the vein by when you have only a very short distance on which to measure it.

Q. But if there are extensive and long openings on the vein, that would be an unfair and improper method, would it not, in your judgment?

A. For the vein as a whole, yes, but it is a very fair method for the individual parts.

Q. The course of the vein generally is the direction that is followed by the workings, is it not?

A. Not necessarily, at all.

Q. Mr. Green, you testified once before in this proceeding, didn't you?

A. Yes, sir.

Q. Isn't that the exact language that you used on page 92 of your cross examination, when you said: "Q. And how do
690 you determine that, by taking the course at the given point, or do you go through all the property and through the various workings upon the vein for the purpose of ascertaining?

"A. The course of the vein generally is the direction which is followed by the workings."

"Q. Which is followed by the miners in their workings?"

"A. Yes."

Did you not so testify?

A. I did at that time.

Q. And the language that I put to you was in your identical language, wasn't it, Mr. Green?

A. Yes, sir. The answer, I see, did not go far enough. I presume that you cut me off rather short, Mr. Gray, at that time.

Q. Didn't you have a sufficient opportunity to explain to the court at that time, if you had any explanation to make, Mr. Green; were you denied any opportunity to explain or qualify your testimony?

A. No, no, I could have qualified it if it had seemed essential at that particular moment.

Q. You say that there are two great faults here that are
691 met in the workings, the Osborne fault, first, you mentioned. The Osborne fault is met on every level as you proceed along that level, is it not?

A. Yes.

Q. The other fault that you say terminates the vein is encountered along in the stopes that rise above the highest working level upon the vein, isn't that true, and in the raises from them?

A. I did not mean to say that, because it is encountered by a drift from the apex tunnel.

Q. With the single exception of the drift from the apex tunnel, it is encountered only in the stopes and the raises from the highest workings from the level?

A. That is true, and it is true for this reason that in the ordinary course of mining the fault effort is to get under your ore body and raise upon it, and in approaching the Osborne fault it was approached practically from above, by reason of the fact that a shaft was sunk from the old lower Stewart tunnel level and drifts were run on it.

Q. You are designating the Clancy fault?

A. You first asked me or spoke of the Osborne fault, and the fact that we approached the Osborne fault on the level, and
692 distinguished between that approach and the approach to the Clancy fault, and I am explaining now the approach to the Osborne fault being on the level for the reason that the openings were made through a shaft, and drifts were driven out to the extent of our ore body, and then the vein was developed upward to the Osborne fault. Had the Fir tunnel been the first opening into the mine, we would have encountered similar conditions in approaching the Osborne fault that we had in the Clancy fault.

Q. Was the ore on the Stewart tunnel level worked by a shaft?

A. No, not from the Stewart tunnel level.

Q. And the Stewart tunnel level——

A. —is not the only level.

Q. No, but it is one of your chief levels?

A. It is one of the main levels, yes, sir.

Q. The stopes which reach the Clancy fault and the only stopes which reach the Clancy fault rise from the Stewart tunnel level, do they not?

A. Yes, sir.

Q. Did you intend to say to the court that you had seen the bend in this red apex which has been painted upon the map
693 Exhibit 3, yourself?

A. I have followed the apex around as shown on that map.

Q. (Last question read).

A. Why, yes.

Q. At how many points, Mr. Green, is it disclosed?

A. In the apex drift and in the old lower Stewart tunnel level, in the No. 1 level, in the No. 2 level and in the No. 3 level.

Q. This bend in the apex is disclosed in the Stewart tunnel level?

Mr. GUNN: I don't think your last question related to that, Mr. Gray.

Mr. GRAY: That was my understanding.

Mr. GUNN: That was the first question that you were asking, about the general line of the apex on that map.

Q. This bend in the alleged red apex that is painted on the map is what I was asking about?

A. That bend is only disclosed or indicated in the apex drift.

Q. At the three points which Mr. Clancy has already marked upon the map, isn't that true?

694 A. Well, that bend——

Q. There has been no development upon any such bend as that, has there?

A. Yes, in the apex drift.

Q. Come up here and show the court where you disagree with all the other witnesses upon that point——

Mr. DINES: I object to counsel commenting on his disagreeing with the other witnesses.

(Objection sustained).

Q. Point out, Mr. Green, on there, the points where those two faults, or either of them, are disclosed in those workings?

A. The Clancy fault is disclosed in the west face of the apex drift.

Q. Where else?

A. The Clancy fault is disclosed in the west face and along the north side.

Q. For how far from the face?

A. Why, I should say it was 25 feet or so.

Q. Where else is it disclosed?

A. The Clancy fault?

Q. Yes?

695 A. It is shown in the crosscut.

Q. Where?

A. Just about half way between station 2525 and 2117, although I will say that it is getting very close to the surface there, and instead of being one persistent gouge, it is very much broken, and the gouge, I believe has been leached out of it, but I believe that seam exists there.

Q. Where else is it shown in there?

A. That is all I know of.

Q. Where is the Osborne fault shown in there?

A. The Osborne fault is shown on the north side of the apex drift.

Q. Throughout its length?

A. No, sir, about 12 or 14 feet east of station 2566.

Q. At the point W, Mr. Green?

A. The Osborne fault shown further west than that, but the vein, where the vein terminates is about the point W1.

Q. Any place else?

A. The Osborne fault shows again over at this corner, at this jog in here.

696 Q. And that is all?

A. Yes, as far as the Osborne fault shows.

Q. Mr. Green, just take a protractor, if you please, and I will take a straight edge. I want you to give me the course of this red apex as it is stated upon the map, Exhibit 3. I will put the straight edge along the wall there?

A. South 46 east.

Q. It shows on there to be south 46 east from where? I want the course from the highest point, where it is developed, to the point where it crosses the east end line of the Stewart Fraction?

A. I think you are laying it at that point. Well, south 45 east.

Q. Will you get this map and point to me the point where it crosses the east end line of the Senator Stewart Fraction?

A. I would not like to select a very definite point there.
Q. Select it just as definitely as you can.
A. I haven't made any measurements there myself.
Q. Select it as definitely as you can. You have given the
697 course of it. Refer to Exhibit 1. I want it where it crosses the east end line as nearly as you can give it from the point where it is developed at its highest point. Mr. Green, what point are you taking?
A. From the point on the No. 2 level where I know that the vein comes up to the Osborne fault, where I have measured it.
Q. You have answered a question and have given the course of that vein, the so called apex of the vein from its highest point on its so called easterly and westerly course or southwesterly and northeasterly course to the point where it crosses the east end line of the Senator Stewart Fraction claim. I want you to lay that straight edge between those points. Are you taking the point W in the east end of the apex drift?
A. Yes, and the point on the No. 2 level.
Q. Is your red apex of the vein developed at its highest point at that point W?
A. Yes, sir.

Mr. DINES: I suggest that counsel should indicate what points he desires him to lay the straight edge between, if there is any difference between them. I don't know whether he and the wit-
698 ness understand each other.
Mr. GRAY: I am conducting this cross-examination.
Mr. DINES: If counsel desires him to lay a straight edge between two points, he should designate the points.
The COURT: I will overrule the objection. If Mr. Green is in any difficulty about the question, he can say so.

A. The straight edge is now at the point in No. 2 drift east, where I know the apex to be, and the point in the apex drift where the vein is cut off by the Osborne fault, and it is the highest point so far developed where the vein is so cut off by the Osborne fault.
Q. Give me the course?
A. The course is north 45 west.
Q. And that is where you get your course, is it, Mr. Green?
A. No, sir.

Redirect examination.

By Mr. GUNN:

699 Q. You answered the last question "no, sir." Now, you may explain why those are not the points from which you got your course?
A. No, those two points are not the only points. The points in the Fir tunnel, in the 415 drift east, I think it is, on the 300 foot raise 314, in raise 218 east and in the east drift and in No. 5 east drift, on the old lower Stewart tunnel level.

Witness excused.

Whereupon further hearing was adjourned until January 11th, 1913, at 10 a. m.

700 SATURDAY, *January 11th*, 1913—10 o'clock a. m.

Mr. GUNN: May it please the court, I find that the record is not very clear with reference to the exceptions to the patent pleaded in the answer in this case, and I believe that counsel for the defendant will stipulate that the exceptions applies to this part of the Quaker claim shown upon Plaintiff's Exhibit 1 as in conflict with the Senator Stewart Fraction.

Mr. FOLSOM: Yes.

Mr. GUNN: And for the purpose of this branch of the case we desire to make a showing as to the quantity of ore that has been extracted and its value, and counsel for the defendant will admit, for the purposes of this branch of the case, that the ore extracted by the Ontario Mining Company from the May, the Gray and the Frank Ore bodies, exceeds forty thousand tons, and is of a gross value of several hundred thousand dollars.

Mr. FOLSOM: Yes, that is without any deductions for freight and for treatment and operating expenses or anything else.

The COURT: Of several hundred thousand dollars. No definite amount.

701 Mr. GUNN: No, sir, several hundred thousand dollars.

The COURT: Well, in the event I find for the plaintiff, I have intimated that I should refer the question of the accounting.

Mr. GUNN: They only made that admission for the purposes of this branch of the case. Of course for the purposes of the accounting we shall then enter into that and show definitely the quantity and the value and the basis for the accounting.

The COURT: Yes, that is all reserved.

Mr. GUNN: With the understanding, then, that the accounting feature of the case is reserved, the plaintiff closes and rests at this time.

Plaintiff rests.

702 Mr. FOLSOM: Your honor I presume understands enough about our theory of the case so that it is not necessary to make a statement. We threshed it out so thoroughly before that perhaps that is not necessary. Of course since the time of the other hearing the Answer was filed, but it follows the lines of our affidavit in the other hearing very largely.

The COURT: Yes.

Mr. FOLSOM: The defendant wishes to offer in evidence and in lieu of evidence, the admission that the Ontario Mining Claim was located on November 1st, 1885, and was patented in 1892; that the Stewart Fraction was located on November 20th, 1899, and was patented in 1903.

Mr. GUNN: We admit the dates as stated, but we object to this testimony as immaterial and irrelevant to any issue in the case.

(Objection overruled. Plaintiff excepts.)

703 *Defendant's Evidence.*

ANDREW C. LAWSON, after being duly sworn as a witness for defendant, testified as follows:

Direct examination.

By Mr. FOLSOM:

Q. Mr. Lawson, please state your full name, your residence and your occupation?

A. Andrew C. Lawson, I reside in Berkley, California, and I am professor of geology in the State University of California.

Q. How long have you held that position?

A. I have been professor of geology since the year 1890, about 22 years or a little more.

Q. From what schools did you graduate?

A. I graduated as a Bachelor of Arts from the University of Toronto, and as Doctor of Philosophy from the Johns-Hopkins University.

Q. Have you ever had any practical experience as a geologist other than teaching?

A. Yes, I have been concerned with active working geology for the last 30 years in addition to my work as a — of
704 geology in the University. I was connected with the Canadian Geological Survey for eight or nine years, and was every year engaged in field work and in the preparation of reports for the Canadian Government, and since going to California in 1890 I have been every year more or less—except one year when I was in Europe—engaged in the study of geology actively in the field, and more particularly in connection with economic problems, the occurrence of ores, and studies of mines, and so on.

Q. Have you during that time had occasion to examine a great many mines?

A. I have examined and reported upon a great many mines in the western states and in British Columbia and in Central America.

Q. What contributions have you made to the literature on the subject?

A. I have written numerous reports and papers in the scientific literature, and besides those reports and papers contributing to the science of geology and particularly in several cases of economic geology, I might say that one of the most interesting experiences I had, and perhaps one of the most interesting contributions
705 made was in connection with the earthquake of 1906 in California. In that year a great fault opened in California, and the earthquake which it occasioned gave rise to a great public consternation, and after the earthquake the Governor of the State appointed me a member of a commission to investigate that matter, and in that matter I prepared, in conjunction with the other members of the commission, a report — that event.

Q. That was published, was it?

A. That was published by the *the* Carnagie Institute of Washington, D. C., they supplying the funds for the work and the publication of the results.

Q. Have you ever examined the Ontario mine and the ore bodies situated therein, the mine involved in this controversy?

A. I have.

Q. How much time have you spent in the study of the Ontario mines and the adjacent mines?

A. I have spent sometime examining the property, the Ontario and the adjacent properties some three or four years ago, the examination was incidental to other work and I did not go into details then; but in the last two or three weeks I have been studying those properties practically daily, since about the 21st of
706 December.

Q. You never had occasion to examine the ore bodies and veins in the Senator Stewart and the Senator Stewart Fraction claims owned by the Stewart Mining Company?

A. Yes, I have visited nearly all portions of the mine which are now open, and gone through the various levels and raises and in many of the stopes which are now open, and have taken pains to acquaint myself as far as possible with the mines.

Q. Will you describe generally the ore bodies in the Ontario, the ore bodies in the Stewart Fraction, their relation to each other, and such incidental matters as may assist the court in determining the controversy here involved. Would you like the large map now?

A. Yes. I can use the 50 scale map, perhaps.

The ore bodies in the Ontario claim are developed best in the Gray and in the Frank stopes, and in those levels and above them in the stopes one can see that the back of the ore is a vein that has a variable thickness and a dip upward, as indicated by the stoping on this exhibit.

Mr. FOLSOM: I desire at this time to have the exhibit marked Exhibit B. I will state to the court that we desire to finish with this witness in time for him to take the afternoon train, conse-
707 quently I will postpone the proof of the correctness of the map until a later time, but I presume he may refer to it.

The COURT: Very well. The map may be marked for identification and the witness may refer to it.

Map marked Defendant's Exhibit "B," for identification.

WITNESS: The strike of the vein in the Gray ore body and in the Frank ore body is quite regular and persistent for the extent to which the workings are opened up on the vein.

Q. For a total distance of about how much?

A. For a total distance of a few hundred feet. I should say that in the case of the Gray ore body, in the Gray drift, the strike of the vein was regular and persistent for a distance of 320 feet, and is in the neighborhood of north 30 east. In the Frank stope on the lower part of that stope in the drift the strike is persistent for a distance of over 200 feet, and has a course of about north 40 east, there being a divergence of about 10 degrees between the strike of the two ore

bodies, the two being somewhat separated by a fault which passes through the level above which the stopes are driven. Now,
708 above the ore body of the Gray and the Frank, and including in the Gray the May ore body as a minor adjunct to it, the vein extends upward on its dip, and there are various levels run upon the vein having a general course which is indicated by the general course of the drift across the face of this map, Exhibit B. The vein may be followed on its dip up the various stopes from one level to another, and as far as the old lower Stewart tunnel level, and to a certain extent above that level, but above that level the exposures are at the present time obscure and only a few points can be determined.

Following the level along the general strike of the vein in a northeasterly direction, the vein terminates against a fault, and it has not been discovered as far as I am aware—I at least have not seen it beyond that fault, but the fault is the one which has been referred to in this case frequently as the Osborne fault. The Osborne fault is a fault of very considerable magnitude, and of great extent, which has been mapped by the geological survey in its publications in this district, but I do not vouch for the correlation of this fault with the fault as determined by the geological survey as the Osborne fault; I think there may be some doubt about that, but there
709 is no doubt about the fact that there is a great fault here, against which the vein in its general strike abuts and stops, constituting an end to the vein in that direction. Now, the abutment of the vein upon the fault that I have referred — occasioned a local disturbance in the trend of the vein, and that deformation,— that local deformation or disturbance in the vicinity of the fault is one which may be expected to occur in such a situation. It is, however, a feature of the vein which is abnormal; it is not the regular or normal condition of the vein, particularly as regards its strike. We have a normal condition manifested in the general trend of the drift along the strike of the vein, and when we come in the vicinity of that fault we encounter an abnormality, that is to say the strike is deflected from its normal course so that in taking into account the strike of the vein, we cannot select the small relatively insignificant portion of the vein which is just deformed by its abutment on the fault, and not take into account the larger amount that extends far beyond that deformation to the southwest.

Now, in connection with that consideration, I would like to point out—is there a blackboard handy?

Q. Yes.

A. I would like to say a word or two about the deformation of the vein in general, and point out that they are exceptional
710 and abnormal conditions of veins due to various causes, which do not detract from their general or normal characters seriously.

Mr. DINES: We suggest that if there are to be some additional diagrams drawn we would like them preserved in such a condition that they can be put in the record. I don't think evidence should

be introduced in the form of blackboard pictures so that we cannot make a record of it. If it can be done on a piece of paper——

The COURT: Yes, I shall make that ruling.

Mr. FOLSOM: Couldn't it be copied afterwards?

Mr. GUNN: We could put a paper right over the blackboard.

The COURT: It can be preserved by tracing. Diagrams may be made on the blackboard, and by tracing a record shall be preserved.

WITNESS (drawing): If we have a step hillside, indicated by the marks "X" and "Y" on this diagram, and on that hillside there is exposed a vein, that vein may be found to outcrop in this fashion, and it may appear at the outcrop that that is the dip of the vein. At point "C" we have the outcrop of the vein, and as it appears at the outcrop it would seem that the dip has the
711 angle indicated in the diagram, but if it be followed further it may be found that the dip is totally different, and that this vein has a dip downward like I have indicated by the continuation of the lines from the letter "D" to the letter "E." Now that condition is by no means uncommon; it is a representation of the phenomenon which is known in geology as creep of the hillside under the action of gravity, and if these rocks be weak rocks, the extent of this zone of creeping may be very considerable, and we have a very deceptive picture as to the real dip of that vein if we did not take into consideration the fact that it was a zone of disturbance, whereby the whole surface of loose material of the hill, in picking up the vein may have dragged or bent it down the slope. Now, no geologist understanding the situation or have- access to the information would regard this as indicative of the true dip of that vein; he would take the direction, I will say, from "F" to "E" as representing more correct*ing* the true dip of the vein, and here is an abnormal condition in that vein, due to deformation under the action of gravity, and that condition of abnormal dip is not taken by anybody as suggestive, or indicative of the true
712 attitude of the vein in the mountain, and that condition is very analogous to the condition which prevails when we have the vein coming up against the fault. Similarly,—in a similar way the vein is deformed locally on account of the fractional resistance to movement along the plane of the fault, and the vein may be turned up slightly or bent away from its normal strike and from its normal dip, and by analogy with the simpler case that I have described the zone of abnormal condition is not to be taken as making the true strike or the true dip of the vein. In other words, in order to ascertain what the dip and strike of the vein is, we have got to follow that vein to a point somewhat beyond the point of the surface.

713 And applying that to the case in question I should say that the strike of this vein is far more clearly revealed by the levels following the vein to the southwestward than it is by the abnormal bending of the vein in the immediate vicinity of the fault or extending out possibly to 100 feet from it.

Now, there is another consideration in this particular case that I

have cited here whereby we have the deformation of a vein which not only happens, that vein may bend but if the disturbance be rather more intense, if the hillside be somewhat steeper, or if the rocks are somewhat bigger, than it is entirely possible and indeed it occurs not infrequently that portions of the vein *as* broken off and broken down and become detached from the firm vein in place, and when we have a condition of that kind we could apply the term "drag" to it; the vein is dragged by gravity, this portion or fragment of the vein is dragged by gravity away from the apex of the vein, and similarly when we have a vein coming up against a fault, particularly a fault with a large movement, we have very commonly fragments of the vein detached from their normal position and dragged out as isolated fragments into the general disturbed
714 condition of rock which we refer to frequently as the fault breccia or the fault gouge, so in considering what is the vein we must take into account the fact that these portions are not properly in place, that they are detached from the firm vein. So that I should be distinctly inclined to apply these principles that are commonplace in geology to the case before us, and to say that we must not describe the strike and dip of that vein by local observations within the zone of deformation, and to say further that where we are dealing with the drag pieces of vein away from the vein material, that that is something apart from the vein and detached from it, and is pertaining to the fault zone or fault breccia rather than to the vein itself. I do not know whether I have answered your question fully, Mr. Folsom, but perhaps——

Q. (Interrupting.) I will ask you if the edge of the vein against the Osborne fault which you have represented as the end of the vein, whether that at all places reaches the major fault or the big fault which they refer to in their testimony as the Osborne fault?

A. That question can be answered also by means of a diagram.

715 Q. Mark the other diagram exhibit "C."

The said diagram was thereupon marked Defendant's Exhibit "C" for identification.

A. The large fault that has been called the Osborne fault hitherto in this case is well revealed on the fir tunnel level in the vicinity of station L 5103, and again on the same level at the end of the crosscut near the station marked on the map 5398, although it is not clear whether the station applies to that level or to the one immediately above it. The place I refer to is at the end of the curved crosscut on the fir level. That same fault is also intersected on what is known as the 400 lateral, so that on that level we have three points well defined on the same level on that fault, and it indicates very materially the course of strike of the fault. The only other place where I am confident that that fault appears again—I will not say that—there is one other place where I am confident, and that is on the No. 2 level in the cross cut that is named on this map exhibit B, 200 north crosscut. At the end of that 200 north cross-

cut there is encountered the same fault precisely as occurs
716 down on the fir level, and the strike of the fault being known from this level and the strike also being nearly coincident through there on the No. 2 level at the end of this No. 2 crosscut, for a considerable distance having the same character precisely as we have on the fir level, I have great confidence in the strike and dip of the great fault. When we come to other places where this great fault stops going northeasterly on its strike against this fault we have not the same evidence that we are dealing with the so-called Osborne fault. We have a termination of the vein undoubtedly against the fault, but it seems to me that the condition that prevails is something like this as I shall attempt to indicate on the diagram. We have the great fault coming down at an angle of about forty degrees and on the fir level we have that fault terminating the vein on its strike, but at higher levels in the hanging wall of that fault there appear to be branches going out probably in some such course as this, and these branches, this branch or branches, I will put it singular or plural, because I am not quite certain about it, these branches of the main fault are the things we strike on the onward course of the vein in its strike to the northeast, and the
717 major fault or the main fault goes on beyond underneath these. Now, as a consequence of that it seems very probable that in the blocks of country in between these subordinate or auxiliary faults which go off from the hanging wall of the major fault and the main fault we have or may reasonably expect to find other fragments of the Stewart vein that have not been displaced so far as the fragments that are below the major fault, and that country has never been explored, but if it were explored my anticipation would be that we should encounter the same fragments, pieces broken off, between the auxiliary fault and the main fault of the Stewart vein.

Q. Now, Professor, directing your attention to the Stewart vein again, what do you have to say with reference to the course of the vein, the general course of the Stewart vein, and the general dip, the downward course, the general onward course, and general downward course, that is, what is the approximate onward course and what is the approximate downward course?

A. Referring to that question I would like to say a word or two about the general conditions, as to these questions which apply in this district. The Stewart vein is not a vein by itself or
718 alone; it is part of the system. We have several other veins constituting this system, namely, we have the Jersey vein, we have the Francis vein, we have the Barr vein, we have the Caledonia vein, we have the Sierra Nevada vein, and we have the Stewart vein. These constitute a system of veins running through this country and the general strike of those veins—now, I am using the word "general" very deliberately, and I am perfectly aware that in their strike we find irregularities, but the general strike of that system is northeasterly, and the general dip of that system is southeasterly, and that general fact applies to this particular case; what is true of the general direction, what is true of the group of veins as

a whole in their general extent is true in this particular case, that the strike, for example, of the vein in the Ontario workings in the Gray stopes is about north thirty east, in the Frank stopes it is about north 40 east, and in the course of the upper workings in the Senator Stewart Fraction and in the Senator Stewart claims we have the same northeasterly trend of the ore strike of the vein. I would have to, I think, put the protractor on that to give you
719 the accurate strike of the upper parts of the vein. In a general way it is in the neighborhood of north 30 east, and the general dip is southeasterly at an angle usually between thirty and forty, but variable because of two things, namely, that the real dip is not a constant, steady value, angular value, and due also to the fact that the vein is broken more or less by faults so that its course downward on its dip is not a constant value.

Q. That direction you just gave of north 30 east was along what level?

A. That was along the Stewart tunnel level. I beg your pardon, that was along the——

Q. That is right.

A. The Stewart tunnel level, yes, sir; there are two branches to that. This is the branch along which the vein runs; there is another branch that runs out to the north there.

Q. What terminates the Stewart vein on the south?

A. The Stewart vein on the south terminates very probably against what is known as the Cate fault. The Cate fault is a fault that is sometimes known as the Ontario fault.

720 Q. It is the same fault that they have referred to?

A. It is the same fault as the Ontario fault, and that fault is well displayed in the upper Stewart tunnel at the point station L 5448 on exhibit "B." That fault has a general strike of northwest and southeast, and it dips to the southwest at an angle of about forty degrees. That appears to be a persistent fault running through the country in the same sense that this great fault on the northeasterly end of the vein is and is the southerly or southwesterly termination of the vein. The vein abuts upon it and stops where it encounters that fault, and the Stewart vein is a fragment of a very much longer vein that extended far at one time to the northwest and far to the northeast, probably, and in between these two faults, this fault running through here and this so-called Osborne fault, and its auxiliary branches running through this portion of the ground from what is known as the Siligo tunnel on this exhibit "B" down to the fir tunnel in the vicinity of station L5103.

Q. I will ask you where the top or apex of the ores within the Ontario claim is found?

A. The top or apex of the vein upon which you find the
721 Frank stope and the Gray stope and the May stope, the apex of those ore bodies and of that vein is up the dip off to the northwesterly in some region not known to me, off in this direction (indicating).

Q. Have you any cross sections that you have made on this vein showing the dip of the vein?

A. I have prepared, I think, two or three sections which are intended to indicate and illustrate the dip of the vein.

Mr. FOLSOM: Just mark that, please.

The said cross section was thereupon marked Defendants' Exhibit "D" for identification.

Q. Under whose direction was exhibit "D" prepared?
A. That was prepared under my direction.
A. Is it correct in showing what it purports to show?
A. Yes, sir, it is correct in showing what it purports to show.
Q. Through what line was that drawn?
A. This section was drawn through the line 2-2 prime on exhibit B. It is the usual transverse section representing the appearance of the structural features on a plane of which this vertical plane 2-2 prime is a trace. The section is existing as showing the vein
722 abutting on its upward course upon the Clancy fault and as showing an interruption in the downward course of the vein at a place by what is marked on this map as the Deering fault. That fault is found crossing the old lower Stewart tunnel level at a place westerly from station 5261 and on the parallel crosscut marked on the map as East three crosscut between stations 5264 and 5528. That particular fault is also found on the old lower Stewart tunnel level in the vicinity of station L. 5256, and it is found on the intermediate level below that station in the vicinity of between station L5081 and the top of the raise going down to the No. 1 level. Also found further out, but that is getting beyond the range of this section. I simply mentioned where the fault occurs as the warrant for marking it upon this cross section as an interruption of the vein on its downward course from the Clancy fault.
Q. What is the other fault shown near the bottom of the cross section?
A. The other fault is a fault that is nameless, and which is observed in this crosscut extending out from this portion of the fir tunnel level near stations—it is marked crosscut east 409, and
723 the fault is near the extremity of that crosscut, and it also appears in the neighboring opening and about the station L5474.
Q. Have you any other cross sections?
A. I have two others.

Another cross section was thereupon marked Defendants' Exhibit "E" for identification.

Q. Referring to Exhibit "E", through what lines is that drawn upon the map exhibit "B"?
A. Exhibit "E" represents the structural features on a vertical plane of which the line 3-3 prime upon exhibit "B" is the trace.
Q. Just lay your ruler on there so the court can see it?
A. The line 3-3 prime lies in the position indicated by the ruler on the face of the map exhibit "B".
Q. What is the upward fault, farthest upward, shown on that cross section?

A. The top most fault marked on this section as the "lower Cate fault" is the one that is sometimes known as the Ontario fault and which crosses the upper Stewart tunnel in the vicinity of
724 station 5448. That particular fault is approximately parallel in its course, that is to say, it makes a very small angle with the line of section, so that in consequence of that fact the fault appears to be rather flat on the line of section, but its true dip is in the neighborhood of forty degrees.

Q. What is the next fault shown?

A. The next fault shown is the Clancy fault. That fault is the one which is projected perhaps two or three feet from the top of a raise which reveals the fault, so that while the line of section does not actually go through the top of that raise it comes within two or three feet of it only, so that there is no doubt whatsoever as to the fault being where it is indicated on this diagram.

Q. What is the next lower fault?

A. The next fault on the diagram is the one which has heretofore been referred to as No. 11 fault, and is interesting as affording another interruption in the downward continuity of the vein. The fault severs the vein and it appears to be rather a flat fault, flatter than it really is, owing to the relation of the strike of that fault to the plane of the section.

725 Q. Was that cross section also prepared under your direction?

A. It was.

Q. You know it correctly represents what it purports to represent?

A. I know it correctly represents what it purports to represent.

Q. Have you still another one?

A. I have one other section.

The said section was thereupon marked Defendants' Exhibit No. "F" for identification.

Q. Referring now to exhibit "F" what does that show?

A. Exhibit "F" shows a cross section of the vein in a vertical plane of which the line 4-4 prime on exhibit "B" is the trace as shown by the ruler on the face of the map as I now hold it.

Q. What is the fault shown on that map in blue?

A. At the top, the uppermost fault is the Clancy fault showing the vein in its upward course abutting upon it. The next fault downward is the No. 11 fault interrupting the continuity of the vein, and the next fault is a small fault of minor importance on the
726 Gray and May drifts interrupting very slightly the ore bodies of the May and the Gray.

Q. I will ask you, Professor, if any portions of the top or apex of the Stewart vein below the Clancy fault is found abutting on the Osborne fault, found against the Osborne fault—if the top or apex of the Stewart vein is found against the Osborne fault below the Clancy fault?

A. It is not.

Q. What have you to say with reference to the nature of this vein, as to whether or not it is a fissure or replacement vein?

A. It is both. It cannot be segregated from the fissure veins. It is, to be sure, a vein in which the ore has been deposited very largely by processes of replacement, but those replacement processes have gone on along a fissure, and it is both a fissure vein and a replacement vein. The deposition being by processes of replacement and the fissure determining the locus or place of deposition and the extent of replacement being variable out from the fissure on either side.

The COURT: Do you want to introduce these cross sections?

727 Mr. FOLSOM: Yes, sir, in just a moment.

Q. On all of the cross sections, the vein is represented by red and the faults by blue lines?

A. On all the sections the vein is represented by red and the faults by blue, and I would like to state further, as I think I failed to do so, the fact that the sections are drawn at right angles to what may be fairly taken as the general strike of the vein.

Mr. FOLSOM: I offer them all in evidence, all the exhibits that have been marked, excepting exhibit "B."

The COURT: They will all be admitted except "B."

The said exhibits were thereupon all marked admitted except the Defendants' exhibit "B."

Mr. FOLSOM: You may inquire.

Cross-examination.

By Mr. DINES:

Q. Professor Lawson, plaintiff's exhibit "C" identified by you and sketched on paper was intended simply as an illustration and not as representing anything that appears in the ground in the mining workings in controversy?

728 A. That is true.

Q. In that case, you have shown X-Y which is supposed to represent the surface of a mountain?

A. Yes, sir.

Q. And at point "C" you have assumed an outcrop of a vein?

A. Yes, sir.

Q. Outcropping on that surface. And from your point "C" to "D" you have simply represented an ordinary condition of a vein, as you say, as it creeps in the course of time to a point a little farther down than it was supposed to be in relation to the other portions of the vein at first; is that right?

A. That is so.

Q. Is not that caused more—the characteristic bending that you have shown in exhibit "C" is not that caused more by the general wash down the mountain side, the washing off of the material, the washing off of portions of the vein, until you have a vein left, rather than by the weight of the mountain?

A. No; that is not so. The wash, the term "wash" is used in geological practice to designate the material that is carried

729 down by the rush of waters from steep mountain slopes to the lower flanks of the mountain, and this particular phenomenon

that is illustrated in exhibit "C" is a different thing; it is the gravitative pull or deformation of the rocks beneath the wash.

Q. Your idea is then, that the weight of these rocks beneath here have simply pulled the vein down along the lines of action or gravity; is that right?

A. No, sir, it is not. When I speak of the gravitative pull I mean the pull of gravity on the whole mass acting down here; I do not mean the pull of gravity on this part, hitching onto this and pulling that down there. But I mean the general pull of gravity to this slope tends to cause the material to be bent over so that any straight lines that are going up there would be bent over, any lines that appear on that surface would be bent over in response to that gravitative pull.

Q. Do you assume then in connection with this exhibit something that you have not yet stated, that the weight that was over the portion of the vein marked "CD" which you have represented as being bent down was more than the weight that was put upon other portions of the vein?

730 A. No, I had no indication of that kind in my mind. The illustration as I see it is a very simple thing, and I have no reservations of that kind. Simply with that surface exposed by erosion and the action of gravity tends to deform the superficial zone of the mountain somewhat faster than erosion can remove the materials, so that we see the effect of the bending under gravity.

Q. Do not the—Does not the action of erosion in your freezing of winter, your thawing and the weathers going down, the general tendency to go down hills of the surface rocks and other materials, going along through this period of years, tend to finally wear that vein off until it is in a different place from what it was when it was originally deposited in the earth?

A. The processes of erosion certainly do tend to remove the loose materials on the surface and to also supply other new materials, and there is an erosive process going on; in fact, this assumed regular surface, the mountain surface here and mountain slope is the projection of the erosion as the surface of all the mountains around about us here are, and yet that erosion is not the cause of this bend-

731 ing; the erosion acted down to that line and the mass of the mountain below that line is being deformed under the action of gravity.

Q. Your exhibit "C" presents the vein that you have as-umed in the cross section?

A. Yes, sir.

Q. That is you put a vertical plane through?

A. Yes, sir, it is intended so.

Q. And you have made it to particularly illustrate, if I understood you correctly, the fact that there may be a change in the strike or the dip of a vein?

A. Yes, sir.

Q. And that you find every where, don't you—you never find a vein that is absolutely ideal between parallel planes and going down at a regular dip in all of its places, all parts of it, do you?

A. No, but I would explain that I was attempting to illustrate a particular mode of deformation and that had nothing to do with the original irregularities of the fissure in which the vein was formed.

732 Q. I am speaking now of those irregularities which are not confined to the dip but are found in the strike or course of the apex, and their relations to the vein, are they not?

A. There are various irregularities exemplified in veins as a common thing.

Q. Now in this particular case you say that in taking the true dip of this vein that it would be fairer to take from the point F to E than from the point C to point D?

A. Yes.

Q. Isn't it a fact that neither one of those courses accurately represent the dip of that vein in the very instance that you have assumed?

A. That is not so. The dip of the vein—when you limit your self to the word "dip" without any qualifying expression such as average dip or general dip, the dip of the vein, it simply refers to an observation take- at a particular place, in this assumed condition, where we have the true dip represented from F to E in this particular section.

Q. Taking your illustration on Exhibit B from point C to point D, and as you have given no number of feet to it, I take the

733 liberty of assuming that from C to D is a distance of 600 feet, and we will assume that a locator, coming along this surface and finding an outcrop, puts his discovery, and he is so located that he has this portion of the vein from C to D, and that some other locator gets the portion from F down to E. Do you think that the rights of the first locator, who had located on that portion from C to D ought to be taken away from him because your dip from F to E, as you think, is the true dip?

Mr. FOLSOM: I object to that as calling for a conclusion of law.

The COURT: Yes, I think that is a conclusion of law.

Q. Well, I will ask it in a different form. I will ask you if, considering the dip, you think that the fact that the dip of this vein from F to E in some other property is a fairer representation of the general dip of the vein that you refer to, that that should take away the fact that from C to D it has the dip as shown here.

Mr. FOLSOM: We object for the same reason.

Mr. DINES: It is not a question of law, it is a question of geology.

Mr. FOLSOM: Well, if you confine it to the geology and

734 not to the law——

The COURT: Objection is overruled.

A. I think that question is hardly intelligible. I would like to have it restated.

Q. Well, I will try to make it clearer. In considering the question of the dip of the vein in reference to certain definite boundaries, such, for instances, as we have in mining locations, where you have surface boundaries of definite extent, a limit on the surface of the

ground, this portion of the vein with the dip CD is in one surface boundary and the portion here, as it changes its dip, from F to E is within the location of another surface boundary, now, when you are considering the relative rights of those two from a standpoint to that vein and confining it to the geological standpoint, you would not say as to the proprietor of the surface that has the dip C to D, that the dip of his vein was from F to E, would you?

Mr. FOLSOM: I object to that on the same ground. I do not understand that the Professor is determining the relative rights of the parties.

Mr. DINES: I ask for the geological situation alone.

(Objection overruled. Defendant- excepts.)

735 A. An answer to that question is hardly possible, because this portion from F to E is under the same surface exactly as that from C to D, so they cannot be under anything but the same surface, as I understand the situation.

Q. You don't claim that the vein on Defendant's Exhibit B which is shown here that you have referred to as the Frank and Gray and May ore bodies, is under the same surface as this portion of the vein that you referred to up here, do you?

A. Certainly not; that is a different situation. Here is the situation——

Q. I am assuming—you can be relieved of that responsibility. I am assuming that the surface boundaries are so located as I told you, that the surface boundaries of one and is right—this portion of the vein is under one locator's located right, and the other C to D is under the first one that I assumed, and you can relieve yourself of the responsibility of the truth of the hypothesis.

Mr. GRAY: I object to the question as improper cross-examination. It goes into something that is entirely different from even
736 the diagram which the Professor drew to illustrate something else.

The COURT: I will overrule the objection. If the Professor can answer, he may do so.

(Defendant excepted.)

A. I find great difficulty in answering the question, owing to the fact that as near as I understand my own diagram, this portion of the vein from F to E is under the same surface exactly as the portion from C to D. Now, how can I discriminate. The question cannot be answered.

Q. Well, Professor, you don't desire to answer that question then?

A. I am perfectly willing to answer that question or any other, if I can.

Mr. FOLSOM: I object to argument with the witness.

The COURT: I will sustain the objection to argument.

(Plaintiff excepts.)

Q. Is it not usual in geology when you take the general dip of a vein as you can get it—not to be exact, but to draw from different known points of the vein, so that in taking the dip you do not ex-

clude one portion in favor of another, you do not exercise any favoritism in showing the dip; isn't that a fair way to deter-
737 mine the dip of the vein, as I show by my pointer on Exhibit B, the general dip, pointing from the point E through the point C?

A. It is not, and I will explain my reasons for that statement. Any geologist recognizing the fact of the creep of that hillside would get into all kinds of trouble if he were to assume that this was the dip, or that the line C represented the dip; he would have to recognize either the fact that he could not determine the dip there at all, or he would have to get some observations of this portion, this undisturbed portion of the vein in order to determine where the dip was. If this were an undisturbed vein, if there were a vein that was entirely undisturbed, and that was the original curvature of the fissure in which the vein was formed, then you would have another question, but under the supposition set forth in this diagram as to an abnormal and locally deformed portion of the vein, that participates in no extent whatever in the determination of the dip of the vein.

Q. Then, I will ask you if the original fissure had been made along the line that you have indicated on Exhibit B, what would you say was the dip of the vein and how would you obtain it?

738 A. That would be a question that would be troublesome, there is no doubt about that, that is to say, that it is difficult to apply anything but ordinary common sense. There is no rule that you can apply to determine the average course of the segment of a circle, and this might very well be so considered, but in a general way, if you were trying to get the course of that vein, you would have to use some such line as you have perhaps indicated, that is, that the general course on the dip on a general downward course might be in the direction that you have indicated, but probably allowing somewhat for a medium point between C and D, rather than to take the extremity at C for determining what that course would be; so you have to use common sense judgment rather than any mathematical rule in that particular case, depending very largely on the length of the different segments. If you have a very long segment, of course you would be warranted to some extent in excluding a shorter segment, but not wholly.

Q. Thank you. I think we understand each other now. I think I understand what you mean about this, and I will ask you then if you draw this conclusion that, in determining the dip of
739 a vein where you are called to pass geologically upon the dip of a vein which is involved in any litigation, you *may* a distinction between the dip of the vein, malformed, as you have stated, by the creep or the weight that tends to place it down along lines of the action of gravitation, and the vein as originally fissured in that position?

A. You asked me whether I make a distinction between the two cases?

Q. Yes.

A. Oh, yes, indeed; the distinction would be very pronounced,

that if this were the original strike of the vein you would have one thing, and if that be a local variation or deformity of the vein you would have another, that is to say, that the two cases are quite distinct from one another.

Q. When you find the vein as you can see and study it in the mountain, you find it with certain irregularities of strike and dip, you mean to say that in the case of a vein where you can account for them geologically as having causes possibly operating over hundreds of thousands of years, that you would go to those remote causes in determining what was the true dip of the vein, rather than to take the thing that was before your senses, the physical evidence in the ground; is that right?

740 A. Certainly. Geology goes back a long way.

Q. That is correct?

A. Yes.

Q. It goes back longer than mining locations?

A. Very, very much longer.

Q. Now, I show you Exhibit D, the cross section; this is also a cross section, if I understand you correctly, which is made on a vertical plane through the line 2-2 prime on that section?

A. Yes.

Q. Why did you have that—you say that was done under your direction; why did you put that plane in that particular place?

A. I made the section to bring out graphically the general downward course of the vein in a direction normal to the general strike of the vein.

Q. When you had that vertical plane passed along the line of its projection, did you consider the question whether it would cut the Clancy fault?

A. It was apparent that it would.

Q. In determining that——

741 A. It was apparent from an inspection of the map before I drew the section that the section would pass through the Clancy fault.

Q. Did the Clancy fault have something to do with your putting the section through that particular part; was that what caused you to identify that and select it, among other matters that you may have taken into consideration?

A. I may have taken that diagonal line because it would cut through the Clancy fault?

Q. Did the Clancy fault have anything to do with your selection?

A. It was intended by that section to show the upper termination against the Clancy fault. That was one of the things that comes out very clearly.

Q. And therefore, as it was intended that way, you selected a portion that showed the termination of that vein against the Clancy fault.

A. That was one of the things.

Q. Did you also consider, in making that selection, where you could get a line through the Deering fault in the same way?

A. Yes.

742 Q. And did you consider also the unnamed fault in the southeastern portion of the exhibit?

A. I recognized in looking at the line on the map at right angles to the strike, that that line would cut through that fault. Yes, I recognized that.

Q. How much projection is there of the vein between the Clancy fault and the Deering fault that is shown in red, and how much of that is actually shown in the ground there?

A. Well, the section 2-2 Prime passes through the Clancy fault at a point which is determined by the general line drawn from the top of raise marked raise No. 2 west on the south side line of the Senator Stewart Fraction, and another point at the southwesterly extremity of the siligo tunnel. In between the position of the Clancy fault has not been observed by me.

Q. Do you know of more than two places that you can identify the Clancy fault, the two places that you have named?

A. I only know those two places in the Senator Stewart Fraction.

Q. How much of the Clancy fault is exposed so that you can see it in the southwestern portion of what you call the siligo
743 tunnel and what we call the apex tunnel?

A. There is quite a good exposure there.

Q. Can you tell me how many feet?

A. I should say that it was exposed for about 20 feet or a little more perhaps.

Q. Did you take the course or strike of the Clancy fault from its exposure in the tunnel?

A. I believe I did, but I observed that it had oblique to the tunnel, so that the tunnel itself shows the course of that portion of the fault in that tunnel.

Q. The same tunnel?

A. Yes, the siligo tunnel.

Q. You do not claim that it is shown anywhere in the tunnel, shown in this portion of it?

A. The Clancy fault is not exhibited in this tunnel as far as I am aware, probably owing to the way in which this was so thickly lagged, and so on.

Q. As you found the strike or course of the fault in the siligo or apex tunnel, did you make your own observations of that strike?

A. I did.

Q. What was it?

744 A. The course of that fault in that tunnel is about—I can hardly get backing for this ruler here on the map.

Q. May I assist you?

A. Well, I have some trouble in laying it flat. That reads about north 40 east.

Q. Did it have that course for the entire exposure of the 20 feet?

A. Yes, it seemed pretty straight.

Q. What was its dip at that point?

A. As I remember it, it was about 35 degress.

Q. In what direction?

A. To the northwest.

Q. What was its course as you found it on the raise on the southerly side line of the Senator Stewart Fraction?

A. I am unable to state what its course is at the top of that raise.

Q. Then, in determining the course of the Clancy fault on Exhibit D as prepared by you, you again excluded the question of what was the course of the fault in the one of its known positions, did you?

A. I did not intentionally exclude anything. I took the observation. *Ot* was not a matter of exclusion.

745 Q. No, I don't say that; I am asking simply for the facts, that if, in giving the course and strike of the fault as shown on Exhibit D, you took into consideration the course and strike of the fault as disclosed in the upraise on the southerly side line of the Senator Stewart Fraction?

A. It is not disclosed there.

Q. Didn't you so state?

A. The strike and dip is not disclosed. The fault is disclosed; you can see the fault gouge perfectly plainly, but on account of the timbers and so on, you cannot determine with any degree of satisfaction what the course is.

Q. Did you make any effort to determine it there?

A. Oh yes; it was quite an effort to get up in that raise.

Q. If you could not determine its course and dip in the raise that you have referred to, how could you get any data by comparison to identify it with the Clancy fault in the position where you identified it in the siligo or apex tunnel.

A. Well, I have been fortified in that belief by the exhibit, the stope map that was introduced in evidence, and by listening
746 to the evidence that was presented in regard to the position of the Clancy fault, so that my belief was greatly strengthened by what I heard, that it lay across there.

Q. Can you point to the evidence or quote what the evidence is that you refer to about that? from which you got your data, instead of getting the course and dip of the upraise on the south side line of the Senator Stewart Fraction?

A. Yes, I can give you further information about it. The fault is well exposed in a raise called Raise No. 7 from the lower Stewart Tunnel level, and in the upper portion of that raise above section 5083 from an elevation of about 3028 to 3040 the fault is well exposed.

Q. Did you take the course of it at that place?

A. I did.

Q. What was it?

A. The course of that fault is very nearly at right angles to the top of that raise, but not quite; it makes a small angle there.

Q. Will you give me the course, if you can. Didn't you have notes that you took at the time?

A. Yes, I may have some notes on it somewhere.

747 Q. Give us your notes of that course?

A. The course as I observed it at the top of that raise was north and south. The dip was westerly at an angle of about 30 degrees.

Q. Well, you find quite a variation between the course of the fault

as exposed in the siligo or apex tunnel and the course of the fault as you took it in the workings that you have last referred to, did you not?

A. Yes.

Q. Now, you have made a study of faults, have you not, in connection with your geological studies?

A. Yes.

Q. And have contributed to the literature on that subject?

A. Yes.

Q. Is it not true that one way you have, where a fault is exposed at one place and another place, to correlate it, is to compare the dip and course at one place with the dip and course at the other place?

A. Yes.

Q. Did the Clancy Fault have a gouge as exposed in the tunnel?

A. It had a gouge, yes.

748 Q. What do you mean by the gouge of a fault?

A. It is the product of attrition in consequence of the movement of one wall of the fault upon another.

Q. Did it have a gouge as disclosed for a short distance in the upraise which you refer to along the southerly side line of the Senator Stewart Fraction?

A. Yes.

Q. How did the gouge compare, one with the other?

A. I think it was rather larger, but not so well observable, owing to the timbering of the raise. The gouge was apparent, but you could not tell much about its course.

Q. Did it have a gouge in the part that was disclosed that was in the Senator Stewart claim?

A. Yes, it had a very fine gouge there, very well defined, and it could be seen for a considerable number of feet.

Q. How did that gouge compare with the other?

A. It was rather a better gouge, a well defined gouge.

Q. What is the distance between the point where it is exposed in the siligo tunnel and the other point where you took its course and dip in the Senator Stewart claim?

749 A. You mean as scaled on the map?

Q. Yes, just enough for an approximation?

A. 720 feet.

Q. Now, there is room, is there not, from a geological standpoint for a grave doubt whether you have the same fault exposed in the two places?

A. Yes, there might be a doubt.

Q. You have an area of country here in which faults are found and frequently developed, and a great many of them, and some differences of opinion as to the identification of them?

A. Yes.

Q. And you have already suggested that there is a difference of opinion between your self and the government geologists, Mr. Ransome and Mr. Calkins as to the identification of the Osborne fault?

A. No, sir, that is not true.

Q. I thought you had some doubt as to this being the Osborne fault?

A. Yes, but that has nothing to do with the government geologists. I do not think that the government geologists have identified
750 this particular fault as the Osborne fault. They have described a very long and large fault running through this district, but there is some doubt perhaps, as to this one being the Osborne fault.

Q. Now, directing your attention to Exhibit D, in how many portion*f* of the Plan map Exhibit B do you find the portion of the vein between the Clancy fault and the Deering fault exposed; I am speaking of the vein now, the red line?

A. The vein is exposed in—I am not sure that it is exposed there, but I presumed that the vein followed this Senator Stewart level, and there is a raise above it through which the section passes, and in that raise, just a short way above the level as indicated here and marked on Exhibit D as an intermediate, I saw the vein.

Q. You did not see the vein, then, in the tunnel, the portion of the drift marked drift 4 west, but you did see it in the raise?

A. The raise being a very short distance above the level is no doubt in my mind that the vein is in the level going down from the raise.

Q. Well, you did see the vein disclosed at that point, and for what length?

A. Where it is disclosed?

751 Q. The number of feet on its dip?

A. It is disclosed for the greater part of the length of this drift, except a few feet at the extreme end, which is caved, but I should say for over four-fifths of the length of the drift the vein is exposed at a number of place*d*.

Q. How wide do you find the vein, or how thick, between walls, if you could tell it at that point?

A. Well, as I remember it it was not a very large vein; it was a vein, as I recall it, of something like two or three feet in width.

Q. It was pinched down very much from what you found it in other portions of those workings, was it not?

A. Well, the vein is sometimes large and sometimes small.

Q. On this particular place where this cross section was driven through it was an impoverished portion of the vein, was it not?

A. Well, it may be so. I did not see any particularly large stopes there, indicative of a rich vein; it seemed to be rather small.

Q. Before we leave the Clancy fault, when you went up into the raise along the southerly side line of the Senator Stewart Fraction, raise No. 2 west, did you follow a vein as you went up the raise?

752 A. The vein is at the bottom of the raise and appears at the top of the raise, but is not continuously exposed in the raise.

Q. Did you find enough in that raise to enable you to determine whether or not the Clancy fault terminates the vein at that point, or that a fault of any kind terminates the vein?

A. Yes, I think so; that was my judgment there, that we had the vein in a general way followed by that raise to the top, and at the top we encountered this gouge which I interpreted as being the gouge of the Clancy fault.

Q. You are not able to identify that vein as any vein in these workings, are you?

Mr. FOLSOM: To what?

Q. That vein in the top of the raise, I mean with the vein in the workings westerly of that point, westerly of a line drawn through the raise at right angles to the southerly side line. Have you been able to identify that vein that you found there terminating against the fault with any vein in the westerly portion of the Senator Stewart Fraction?

A. There might be some doubt about that, but I should say
753 that I would be just as much inclined to identify that vein up there, exposed in the upper Stewart tunnel level, with the vein below the Clancy fault on the lower Stewart tunnel level as I would be to correlate the Frank ore body with the Gray ore body.

Q. I was not asking you for a comparison. I am asking you if you are able to correlate or identify that vein that you find terminated in the upraise with any portion of the vein in the Senator Stewart Fraction lying to the west of the line that I gave you?

A. And in my answer I indicated the extend I could do so.

Q. Well, you cannot do so?

A. Well, if I cannot do so, then I cannot correlate the Frank with the Gray or the May.

Mr. DINES: I would like to have that question answered.

The COURT: Answer the question categorically and then you can make your explanation afterwards.

A. I would correlate the vein in the upper Stewart tunnel level with the vein in the lower Stewart tunnel level, with the reservation that it could not be brought to a demonstration with the present opening of the ground, but that there is a very strong presumption in the attitude of the vein in the upper Stewart level in rela-
754 tion to the vein in the lower Stewart level, that it is the same vein.

Mr. DINES: I move to strike out that portion of the witness' answer to the effect that there is a very strong presumption.

Mr. FOLSOM: No, he is an expert witness.

The COURT: Let him make his explanation. I shall deny the motion.

(Plaintiff excepts.)

Q. Now, Professor Lawson, you are not willing to say to the court positively that the vein you find disclosed at the top of the upraise, raise No. 2 west, along the southerly side line of the Senator Stewart Fraction, is the same vein that you find in the workings on the upper Stewart tunnel?

Mr. GRAY: I object to that on the ground that it is repetition. The Professor has given his entire opinion in reference to that matter.

(Objection overruled. Defendant excepted.)

A. I would not do so positively.

Q. Do the ore bodies to which you have referred in the first

part of your evidence under the surface of the Ontario, known as the Frank and the Gray and the May ore bodies, belong to the same vein that has been called here the Stewart vein, the vein
755 that is disclosed in the easterly portion of the Senator Stewart Fraction claim?

A. That is my opinion.

Q. Now, as you went along the upraise, raise No. 2 west, you went upward to the termination of the vein there, did you not, that you saw?

A. Yes.

Q. You don't think that the vein goes any further at that point in a westerly or northwesterly direction?

A. I do not.

Q. Do you know how far you were from the surface at that point immediately adjacent to the upraise?

A. The top of that upraise is at an elevation of about 3022, and it is almost immediately below contour No. 3150; that would give us the difference of 128 feet.

Q. Did you find stopes to the northeasterly to the upraise which you have just identified above the old Stewart tunnel level?

A. I could see the evidence of stopes, but the stopes were not accessible, except this little thing in here which might be by courtesy called a stope, drift No. 4 west.

Q. You never went up in those stopes to examine whether
756 there was a termination, or to find a termination of the vein as it crosses the southerly side line, if it does at the point that is claimed by us, and goes in this direction as shown on Exhibit 3, of the Plaintiff?

A. You asked me whether I ever went up into the stopes?

Q. Yes.

A. No; the stopes are not open at the present time; they cannot be visited.

Q. Did you go up the upraise from the siligo or apex tunnel that is extended up above the level of that tunnel to the surface in the workings of the Stewart?

A. I did not go up that raise above the level of the siligo.

Q. So you cannot say what that discloses from your own observation?

A. No, I made no observation there.

Q. Did you follow along this tunnel and observe what is shown as you go easterly from the point where the crosscut tunnel enters?

A. Yes.

Q. Did you go to the breast of the workings in that tunnel?
757 A. The present breast. You see they have been working in that tunnel since I have been in Wallace, so I have not seen the latest face.

Q. What did the face show when you were there last?

A. When I was there last they were working right in here and there was very little that I could identify as vein. I found the gouge in here, pronounced gouge in here on this side of the drift.

Q. That was on the point——

A. I should say that it was about—I will measure that, it may be of interest. It is somewhere about 20 or 25 feet a little east of south of station L 5428. There I saw a very heavy gouge, a strong gouge.

Q. Could you identify that with reference to whether or not it was the gouge of what is called the Osborne fault?

A. In my judgment it was not the main Osborne fault; it was apparently or probably one of these hanging wall spurs from the main fault.

Q. Did it seem to terminate the footwall of the vein as it came up against it there going into the tunnel?

A. Yes, that was my opinion about it, that the vein
758 coming along here in the stopes above the level, was terminated on its strike against that gouge.

Q. Did you go in the crosscut to the hanging wall of the vein that is disclosed in that tunnel?

A. I did.

Q. What did you find in that, Professor?

A. I found that the crosscut went out to a caved ground which appeared to be a cave above the old stopes below the siligo tunnel.

Q. Was the hanging wall of the vein disclosed in the face of that crosscut?

A. I think not; not the hanging wall, sir.

Q. Was it in vein material?

A. I am of the opinion that it is not the vein in that crosscut; I am of the opinion that the vein is represented by the stopes below this cave. Now, there may be some vein material there, but I could not find any; that is, if the vein is there it is extremely poor and very much oxidized, and certainly there is no galena there.

Q. You found iron stains there?

A. Yes, you can find them anywhere.

Q. Any evidence of carbonates?

759 A. I found no carbonate.

Q. Did you make any assays or tests of it?

A. I did not.

Q. Your only judgment was from its general appearance?

A. I judged by inspection with the eye.

Q. You are able to identify the vein where it goes down on the stopes?

A. I do. I judged that that vein represented approximately where the vein is below.

Q. And the effect of that would be to bring the top of the vein at that point further within the lines of the Senator Stewart Fraction claim than has been designated on our map, wouldn't it?

A. Further from the lines; what is the meaning of that expression?

Q. Further to the south?

A. Further to the south than what?

Q. You have the crosscut tunnel here?

A. Yes.

Q. That is a crosscut out to the hanging?

A. Yes.

Q. Now, understood you to say that you thought where
760 it caved down on the stopes that that was more indicative of the vein than the portion that you saw in the body of *of* the crosscut?

A. Yes.

Q. I say that the effect of that would be to bring the top of the vein there further to the south than was designated by our witnesses?

A. Well, there is one consideration that modifies that conclusion, namely that the caving would be down vertically, and that the vein is going up on its dip, so that the vein might, if it continued up, outcrop at a little to the north of that cave, by reason of its dip, but as I stated, I could not find the vein there positively; I could not assure myself that the vein was in that crosscut.

761 Q. If it is in the vein it is very close to where it comes in contact with the surface wash?

A. Yes, sir, I think it is pretty close to there.

Q. Then you do not have any serious challenge to the proposition that so far as the proposition of the workings is concerned the top of the Stewart vein is within the boundaries of the Senator Stewart Fraction claim, do you?

A. Well, that involves a consideration of what you mean by top. If you mean edge——

Q. I will use the word "edge," if you prefer it. I am not trying to trap you in any way?

A. It really involves a consideration of that top there, though——

Q. (Interrupting.) I do not wish to involve you. I will ask you if it is a terminal edge?

A. It is an edge, yes, sir.

Q. An edge?

A. Yes, sir.

Q. Then we will call it a terminal edge so that you and I will not be confused in our understanding of what it is. You think it is a terminal edge?

762 A. Yes, but I must explain a little further, that having expressed the opinion that the vein in the upper Stewart tunnel is very probably the same vein that we find below the Clancy fault, that it may not be the extr-me terminal edge; it may be an edge against the fault, it may be an extreme or top edge, but I do not want the term "terminal" to involve that implication.

Q. We will get at the facts, Professor. You think that a portion of the Stewart vein is found within the lines of the Senator Stewart Fraction claim at this point nearest the surface?

A. I think that is so.

Q. That is correct, is it?

A. Yes, sir.

Q. Well, we have found a point that we can agree on. Now, so far as the point to which you have just directed my attention, and seeming to bother you, that if there should be a correlation of the vein that is disclosed in those workings on exhibit "B" or "D" of

defendant's and called the Stewart vein within some future development, in some point over here, where an apex is developed or a top or terminal edge or a top of the vein near the surface is developed, that would not necessarily preclude that there would be another part that might be nearest the surface, would it—take a bend of the vein, take the vein on the course of its apex?

763

A. No; you could have a number of courses on a vein, in fact, at the surface.

Q. You frequently have that. Take the form of a curve—are you familiar with what is known as the horseshoe base where it took the form of a horseshoe and was designated a vein; you have seen veins similar in occurrence?

A. Yes, sir.

Q. Where the apex is in a curve?

A. Yes, sir.

Q. Now, doesn't it happen when you have that particular formation the course to the apex of a vein, or to the portion of the vein nearest its surface, whatever you call it, that there will be a number of points in that line that will all overlie the same body of ore down below in the vein?

A. I am not quite sure as to what the English language means there by "overlie." It seems a common word, but when you ask me if a number of points overlie the ore, that is questionable.

764

Q. Well, I will put it in this form, then, Professor, if you prefer it. Is it not true where it goes in that form that I say, and I am taking a typical vein now, not particularly confining you to this, if you descend from any point on your assumed apex, an apex in the form of a horseshoe or a curve, if you follow from any point on that apex on the true dip of the vein at right angles to i-s strike at any point, that you will find that those points or apex following down the line at right angles to your strike of the vein at that particular point will have several points of apex covering the same point in the vein below?

A. Surely, surely; that goes without saying.

Q. Yes, sir. So I say, then, your supposit-ious case that there might be an apex of this vein found in the westerly portion of the Senator Stewart or Senator Stewart Fraction does not necessarily preclude the proposition that you may have an apex in the Senator Stewart Fraction claim at some portion of it?

A. I do not think it necessarily precludes it, no, not necessarily.

765

Q. Now, as you examined the points where the Senator Stewart vein or the Stewart vein comes in contact with this fault which we call the Osborne fault at the various points that have been detailed along the raise R 218 E., I believe, the raise 218 E I believe it is *is*, I mean this raise here——

A. Yes, sir; I see it, that is 218.

Q. Yes, sir; and at the points of the fir tunnel in the fir tunnel level and the 300, have you examined the condition of the vein where it comes up in immediate contact with the fault?

A. Yes, sir; I have examined the ground through those openings that you have referred to with that object in mind.

Q. Is it your opinion that the fault terminates the vein in its upward course at those points?

A. No, it terminates it on its strike.

Q. Well, I did not ask you whether it was its strike or whether it was its dip; I asked you if it terminated it on its upward course?

Mr. GRAY: He said no and is explaining.

The WITNESS: I am ready to answer no. I answered No.

766 Q. You answer No?

A. Yes.

Q. Is it not true that those points where the Stewart vein comes in contact with the Osborne fault are in a higher horizontal plane than the ore bodies under the Ontario which you have identified?

A. Will you give me a point on those two lines?

A. I will take any one of them, any point where you have found in those workings the Osborne fault terminating the Stewart vein, are those points, any and all of them, in a higher plane of elevation, horizontal plane, than the ore bodies in the Ontario to which you have referred?

A. I will select a point which would negative your question.

Q. All right, sir, I will take that point and meet it and then go to the others.

A. We will take the point at the foot of the raise 314 E. on the 300 level, and we will follow that level southwesterly into one branch, the Gray stope, and into the other branch, the Frank stope, and I cannot say—in fact, my opinion is that the level where it
767 enters the top of the Frank stope and the level where it enters the top of the Gray stope is somewhat higher than the point at the bottom of this raise at the point 5129.

Q. Did you take the elevations there?

A. I am basing that conclusion upon the grade of the level, that the grade of the level is going up in this direction.

Q. Have you taken into consideration the fact that you go into the top of the stope?

A. Yes, sir; that is what I say, I have taken into consideration the fact that I go into the top of the stope.

Q. And the point you have named is above the level?

A. The point that I have named—we have a stope here above the level also, yes, sir.

Q. Yes. And you have the point where the vein comes in contact with the Osborne fault above the level, haven't you?

A. I suppose that plug is in the top of the level, the surveyor's tag or station, but for practical purposes the difference may be a few feet one way or the other, but my judgment is, if you will allow me to collect my points in answer to it——

768 Q. I am going to take the other points now.

A. That these points on top of the stope in the Gray and the Frank appear practically as the stopes in the northeast of the No. 2 level.

Q. And in going there you do not follow a plane parallel to the end line of the Senator Stewart Fraction, do you? The level goes down?

A. You follow the level, yes, sir.

Q. And that does not go——

A. (Interrupting.) It is diverging somewhat from the end line.

Q. Take the next point as you go northwesterly where you find the termination of the vein against the Osborne fault?

A. Well, any other point for example up here on the No. 2 level, would of course be higher of the developed stopes on the Gray or the Frank, but I should like to explain in that connection——

Q. Make any explanation you wish. You answer the question, however, that it would be in a higher horizontal plane?

A. I answered that question definitely, and I would like
769 to explain by stating that if you take the plane of a vein on which that black line "AB" is the apex and follow it on its downward dip into the ground we may encounter a condition which will quite clearly constitute a bottom to the vein. It may be cut off very positively at the bottom by a fault so that if you try to penetrate the ground below that bottom termination or lower edge, that you will not find the vein anywhere. Now, it is entirely possible to go downward even from the bottom of the vein. I can take a downward course from the bottom of the vein and keep on going down and be in the vein all the time, so that considerations of that kind have to be taken into account when I answer a question of this kind as to whether these ore bodies are down from that point or not.

Mr. GRAY: Mark that illustration, will you, Mr. Reporter, so that we will have that.

Mr. DINES: Yes, sir, mark it as the counsel wishes. I have no objection; I will be glad to have it.

Mr. GRAY: Exhibit "G," isn't it?

Mr. DINES: The Defendant's exhibit, "G."

Mr. GRAY: I think so.

770 Mr. DINES: I think that is right. The last one is "F."

Q. You have drawn on what is to be identified as Defendant's exhibit "G" what you call a bottom edge or termination to a vein?

A. Will I make that "XY"?

A. Yes, sir, make it "XY," between the points "XY." You have also drawn another line making an angle with that line; will you kindly designate that, too?

A. "PQ."

Q. "PQ." What angles have you taken for this, and what have you compared this plane with on this exhibit?

A. I have taken no particular angle, and I have made no particular comparisons except to point out, I desire to point out that I can start on the bottom of a vein and still go down and remain in the vein, and that that consideration must be kept in mind when I am answering the question as to whether I can go down to a point in this abutment of the vein on a strike upon the fault into the Frank and Gray ore bodies.

Q. I direct your attention to a line drawn in the direction that my pointer indicates on this exhibit "G," and ask you if you
771 found that to be an edge, would you as readily identify it as a bottom edge as you did the one you drew?

A. I would not.

Q. You think that would be a top edge, do you not?

A. It might be.

Q. And as I go along here, what would that be? I would like to have you mark the line of my pointer, in the first instance, if you please; I think I had it about at right angles to it, just put a dotted line, if you please?

A. (Witness marked exhibit.)

Q. Will you kindly mark the point of intersection of the line "AB?"

A. "MN."

Q. Now, taking your own illustration where we have the line "MN" projected here and making an angle that is disclosed on this exhibit with your line "FC," you would not, you have stated, identified "MN" as a bottom edge; it would be a top edge, would it not?

A. It might be so considered as a top edge, yes, sir.

Q. Now, where you have a fault such as the Osborne fault
772 with a strike approximately north 75 to 80 west and a dip varying from forty degrees in some places to the southwest and in others a dip of seventy degrees, and you have a vein with a course such as you have found in the ground, the Stewart vein, to have a dip such as the Stewart vein has, will it make a line of intersection with the Osborne fault where they come together more like the line "MN" that is shown on exhibit "G" or more like the line "XY"?

A. I should say that it would make a line more like the line "XY" in this particular case that we are dealing with; that is to say, taking the course of that apex indicated on plaintiff's exhibit 3, the course of which is between forty and forty-five northwest, taking that for the course of the edge of the vein, I would say, taking that for the course of the edge of the vein the strike encountered on that edge will make such an angle with it that the edge of the vein overhangs and that if you start at any point in that apex, particularly the extreme point, and attempt to go down on the true dip of the vein you will leave it absolutely and go down into barren rock below the vein, because that intersection has a slight overhanging, the
773 vein comes against the fault in such a way as to leave an edge which is farther to the northwest as you go upward—farther to the northeast as you go upward, and farther to the northwest as you go downward, so that the edge actually slightly overhangs it and it is more like the overhanging or bottom part of this vein "XY" that I have represented upon that diagram than it is like the edge "MN."

Q. Have you made any mathematical calculations taking the dips and angles and strike of the Osborne fault and this vein to determine mathematically that question?

A. Yes, I have taken the course of the so-called apex as testified

to in this course. I have taken the two testimonies as to the strike of that apex, one being north forty west and the other north forty-five west.

Q. Do you know at what point it ceases to be a top edge and begins to become a bottom edge?

A. I should say that it would cease to be a bottom edge——

Mr. GRAY: Wait a minute; you did not finish that other answer.

Mr. DINES: Pardon me, if I interrupted him. I thought
774 he was through.

A. I am willing to cut it off there. I am willing to say in regard to your last question that it ceases to be a bottom edge at the point where the so-called Osborne fault intersects the Clancy fault. There is a change; that is an angle, it is not an arc; it is an angle, and there you have a——

Q. I am not asking you that; I am asking you at what angle?

A. You did not say so.

Q. When you have a fault similar to the Osborne fault with a well defined strike and dip and you have coming in contact with that at an angle a vein that makes an angle with the Osborn fault on its strike and on its dip——

A. Yes, sir.

Q. (Continuing.) They are not the same, either in stripe or dip——

A. Yes, sir.

Q. (Continuing.) Have you made any mathematical calculations to determine at what angle or what point it ceases to be a top edge and begins to become a bottom edge?

775 A. I would reply that it ceases to become a bottom edge where the line of intersection of the vein with the so-called Osborne fault intersects the line of intersection of the vein with the Clancy fault, and at that point you have an angle, not a curve; you have a distinct, angular, abrupt change from one to the other; necessarily mathematical considerations.

Q. That will be varied as the angle of strike and dip varies, will it not, that line of intersection?

A. It is a constant thing here.

Q. I am not asking you about this here. I say, the question of top and bottom edge will vary as the angle of strike and dip in your two dipping and striking bodies varies, will it not?

A. Are you talking about this particular case?

Q. No, sir. Will the reporter read the question to the witness.

(Question read.)

A. I am not clear as to whether you are discussing a general proposition?

A. I am discussing a general proposition for your purpose here.

776 A. I will answer Yes to your question then.

Q. It varies?

A. Yes, sir.

Q. Now then, have you made any calculation to determine with reference to the general proposition, assuming different angles of strike and dip to both of these striking and dipping bodies, at what point it will begin to be a bottom edge or a side edge and stop being a top edge?

A. I have never considered a mathematical investigation necessary in this case; it is quite simple.

Q. I am not asking you whether you have ever considered a mathematical investigation necessary or whether it is quite simple. You have asked me if I was taking a general proposition, and I have asked you as a general proposition?

A. I have not made any.

Q. You have made none?

A. No.

Q. So you are not able to state to the court, taking these different angles that are made on the strike and dip by these two bodies at what point one will change from one to the other, are you?

777 A. No, I never had any occasion to.

Q. Then in making up your opinion as to whether or not the points where the Stewart vein terminates against the Osborne fault is a top terminal edge or some other kind of terminal edge, you have no- made mathematical calculations of the angles between the strike and dip, is that correct?

A. I have made some mathematical investigations of that. They were simple, but I have relied upon the testimony given by witnesses in this case, that the course of the claimed apex which is the edge of the vein is according to one witness north 40 west and according to another witness north 45 west, and I have taken that information and find if that be so that it is an undercut edge, and that it overhangs; it is not the ordinary thing in the procedure down the dip in that vein from that apex.

Q. Will you give me what you took in your calculation; state it again?

A. I took the testimony of Mr. Clancy that the course of that apex represented on exhibit No. 3 was north 40 west and the testimony of Mr. Green that the course of that same apex on that exhibit. the same line, red line, marked the apex—marking

778 the apex on that exhibit was north 45 west.

Q. Did you take anything else into consideration in making it?

A. I took the testimony as to the general strike of the vein.

Q. And you were speaking of the vein a moment ago, weren't you?

A. No, I was speaking of that edge of the vein. The strike of the vein is one thing and the edge of the vein is another.

Q. Yes. Now, the course of the apex in this case is not the course of the plane of the fault, is it?

A. No, sir; the course of what is called the apex is not.

Q. Will you tell me what mathematical calculation you made based on this data, give us some outline of how you proceeded, if you please?

A. Well, I took the general strike of the vein at north forty east.

Q. North forty east?

A. Yes, sir; that is the general strike of this vein as near
779 as I can get it, and if that be the strike of the vein and any where between north 40 west and north 45 west be the course of the edge of the vein against the Osborne fault, then the angle made by the strike, put it that way, the angle made by the strike of the vein with the edge of the fault is greater than a right angle, and the vein is overhanging——

Q. (Interrupting:) What course did you give to your Osborne fault; what strike do you give to that?

A. I did not consider that.

Q. You did not make any mathematical calculation, did you, then?

A. I told you I took your testimony for that.

Q. I say, you did not make any mathematical calculation based on that testimony, did you?

A. Well, there is not much mathematics to it.

Q. There is not?

A. Not a great deal.

Q. Do you claim there is not mathematics in determining the lines of a geometrical figure that is made by your intersection before you can tell whether it is a top or bottom; is that correct?

780 A. I will use another——

Q. (Interrupting:) I will ask you to answer my question, if you please?

A. What is the question? (Question read.) I did not deny mathematics entirely. I said there was not much. I would like to explain this matter.

Q. Explain all you desire to, professor; I have no desire to chop you off.

A. Here is the course of the edge of the vein as it abuts against the Osborne fault; that is north 40 west to north 45 west according to different testimony. Now, the course of the strike of the vein is north 40 east and the angle between the edge of the vein represented by the red line marked apex on plaintiff's exhibit 3 is 100 degrees, if it be 40, and if it be 45 it is 95 degrees; that is to say, at an angle greater than 90 degrees.

Mr. FOLSOM: Indicate on that the position of the vein, that is, the dip of the vein?

A. The dip of this vein is in this direction.

Mr. GRAY: In the direction of the arrow.

A. In the direction of the arrow on this diagram, and this is the edge; the edge of the vein with that course is a very dif-
781 ferent thing from the strike of the vein.

Q. Is that all the data that you used in your mathematical calculation?

A. What more do you want?

Q. I am not asking you that. I am asking you if you have stated to us all the data you used?

A. Yes, sir; that I have pointed out there.

Q. That is all I want to know. And did that enter into your calculation as the basis or a part of basis, an element, of your opinion as to this not being the apex of the vein, the points that we have outlined on plaintiff's exhibit 3?

A. Yes; it indicates that this edge which is claimed as an apex on exhibit 3 of the plaintiff is really overhanging slightly and is not even vertical.

Q. Will you point out on this model where that overhanging condition appears?

A. I do not know anything about that model.

Q. I am asking you to do that.

A. I do not know anything about that model.

Q. Well, I am asking you to do that; you have been in
782 there and seen the vein?

A. I cannot point it out.

Q. You cannot point out the overhanging condition that you refer to on this model?

A. Not that model, I don't think so.

Q. Do these points here where the red comes up against the blue lines indicate to you——

A. I have not examined this model and I don't know anything about it.

Q. Well, you can take your time to examine it.

The COURT: You can take your time.

A. (Witness examined model.) The reason that that does not appear clear in that model——

Mr. DINES (Interrupting): I beg your pardon.

A. I say, the reason that that does not appear clear in that model, I have stated that I cannot do so, and I will explain that the reason that I cannot do so is——

Q. (Interrupting:) Well, first——

Mr. GRAY (Interrupting): He has a right to explain.

Mr. DINES: Certainly. Do not get excited, Mr. Gray. I will be glad to have the Professor make all the explanation he desires.

783 Mr. GRAY: Go on, Professor.

A. I will say in explanation, that the reason I cannot do as you have requested in this model is that this model is a representation of that abnormal portion of the vein that I alluded to in the early part of my testimony; that is to say, that it does not represent in my opinion thoroughly the strike and dip of the vein.

Q. Will you please point out anything—take that to pieces, if you desire, and point out a single plane in it that is not correct, a single angle there that is inaccurate, a single cross section that is wrong; we will turn it *opeh* to you.

A. It may be for all that I know to the contrary a correct representation of the abnormal or deformed portion of the vein where it goes against the Osborne fault, but that is a very different thing from a representation of the vein in its entirety or in its general aspect.

784 Q. Now, I understand you as stating to the court that you take that apex of the vein as shown on this model, Plaintiff's Exhibit 15-A and Plaintiff's Exhibit 3, because you say it shows an abnormal condition of the vein, is that correct?

Mr. GRAY: I object. The Professor says——

Mr. DINES: That is the way I understand it.

Mr. GRAY: I want to make my objection, if your honor please.

The COURT: Well, I'll overrule that objection.

A. I think you had better formulate that question so that I can answer it.

Q. If you did not understand it, I will try to do so. I understood you to say to the court that you are unable to show the court the apex in this model that you have referred to as overhanging, and you have refused to give the points that we claim the points of apex in this model, exhibit 15-A and also Exhibit 3, for the Plaintiff, because they show abnormal features of the vein, is that right?

Mr. GRAY: I would like to make my objection, and call your honor's attention to something in connection with this ques-

785 tion. It was not claimed by Mr. Frank that the red paint that he put on here represented accurately the connection of that vein with the Osborne fault; he told your honor that he projected it in some places 110 feet along there.

Mr. DINES: I beg your pardon.

Mr. GRAY: You can do that too. And in other places it was not exposed except here and there, and that he had painted it up along this Osborne fault, believing that it was there, but he did not pretend to say that it was exactly as shown here; whereas there is in evidence the map which accurately shown the position between the two points, and which goes accurately give its course, and which would show whether or not it was an overhanging body.

(Objection overruled. Defendant excepts.)

Q. Is that correct?

A. Well, it is not quite correct, but my difficulty in answering your former question is that we have a condition of the vein there in which we see next to nothing of the true strike of the vein. I am referring to the model, No. 15-A. Now, that is a limited portion

786 of the vein which comes up against the Osborne fault, and as I see it, it does not represent the strike of the vein. Now, for that reason, having this deformed condition of curling up on the fault, which I discussed in the latter part of my testimony, it is difficult to say as to the overhang, and particularly as the dip that I spoke of is not its dip, but a dip at right angles to the general strike of the vein, which is not represented on this model. That is the mechanical difficulty in the situation.

Q. Well, you wish to change your testimony, then, to say that that is not because it shows abnormal features that you are unable to agree with us on the apex?

A. No, my testimony stands. I say that it is an abnormal portion of the vein, and I say positively that it is a change which has

modified and deformed in the vicinity of the vein by reason of its abutment on the Osborne fault. Now, I think that is not a fair place to find the strike of the vein. You have got to follow the vein far from the fault in order to get the true strike.

Q. By the dip you mean a dip up and down a plane at right angles to the strike, or the true dip, do you?

A. That is what I mean, yes.

Q. You are not considering the question that that would
787 be a downward course?

A. Well, the downward course I think is generally understood to be the dip.

Q. Now, I will ask you from this point, and I am indicating Plaintiff's No. 15-A, the model, if from the point where that terminates against the Osborne fault, with the exception of the one point that you have designated heretogore, where it goes along the 300 foot level, if at every one of those points there is not a downward course onto the Ore bodies of the Ontario from that point?

A. Yes, and I will explain in saying "yes" that there is the same kind of downward course that is found on this diagram from "Q" to "P," starting from the bottom of the vein and going somewhat further down in the vein, there is that kind of downward course, but it is not on the dip.

Q. And in estimating that kind of downward course, you are not able to state to the court at what point it will cease to be the top edge and begin to be the side or bottom edge, can you?

A. Well, in regard to that question I would say that if we had a line like the line MN on the diagram, I suppose that might fairly be called a top edge, but when the line MN gets in that
788 position, then there might be considerable doubt about it, when it gets nearly vertical, and when it is actually vertical I should say it could not be a top edge, and when it passes that verticality it certainly could not be a top edge.

Q. Then your top is the 90 degree angle?

Mr. GRAY: He didn't say so?

Mr. DINES: I am asking him to say.

The COURT: He certainly can ask him.

A. I recognize that there is a zone in here where there may be considerable doubt, when it approaches verticality, when the edge of the vein approaches verticality there may be a considerable doubt as to whether it is the side edge of a vein or the top edge of a vein, but when it gets over to a position such as the line MN is drawn on my diagram, there would not be much reasonable doubt, and when it gets below or the other side of the verticality there certainly could not be any reasonable doubt as to the fact that it is not an apex.

Q. Now, in taking your strike of the vein, are you taking the strike of it in the immediate portion where it comes in contact with the Osborne fault, or are you taking it at some other portion
789 of the vein adopting some general course?

A. I am taking the general course of the vein.

Q. Have you considered the course of the apex in determining the question of the angle?

A. The last question is not clear to me; I don't understand it.

Q. Have you taken the course of the apex of the vein or the course of some *the* body of the vein, in making this determination?

A. As regard the strike?

Q. Yes, as regards the side edge and top edge?

A. Why, that is a general diagram. I have not attempted to indicate there anything especial. I am not quite clear as to the meaning of the question.

Q. I mean in determining the question as to whether or not the line that is indicated in the model and in Plaintiff's Exhibit 3 as the line of the apex of that vein, have you taken into consideration in denying that proposition, the course of the apex of the vein, or the course or strike of the body of the vein shown in the interior workings?

A. I have taken both.

Q. What has been your resultant?

790 A. I have stated it here. Here it is in this diagram. I have even written it.

Q. I thought you just stated to us that that diagram is a general illustration?

A. I was pointing to this one. There are two diagrams on the one sheet of paper. This one is specific and that one is general. This is specific and has reference to this particular case. I think those should be marked.

First diagram to the right of the sheet of paper marked Defendant's Exhibit "G," and second diagram to the left of the sheet of paper marked Defendant's Exhibit "H."

Q. Now, Professor, directing your attention to the model, I will ask you to state if, taking the different points, all of them except the ones that you have indicated where there is some doubt, it may be a few feet one way or the other, they are continuous to the Ontario ore bodies from above; taking the further point whether or not, going down on the planes parallel to the end lines of the Stewart fraction you would not go on a downward course?

A. Yes that is so, you would go downward, going to the Ontario ore bodies, and I would like to explain again.

791 Q. I think you have explained it. Your idea is that it is not the character of downward course that I have shown?

A. Yes, I would like to explain that this diagram illustrates the kind of downward course that you have had in that case.

Q. Well, you have explained that. I would you would answer this question specifically. It is a downward course, isn't it?

A. Yes.

Mr. GRAY: Now, you can explain if you desire.

A. I think I have explained it.

Mr. DINES: I am entitled to a direct answer sometimes.

The COURT: Certainly. The explanation has been already made and the court understands it.

Q. It is also true, isn't it, that the line that is indicated on Exhibit 3 as the line of apex that we claim, does indicate the line of the terminal edge of that vein approximately correctly within the lines of the Senator Stewart Fraction.

A. I think so.

Q. We can agree on that, can we?

792 A. Yes.

Q. It is only when you begin to classify the terminal edge that there is any difference between us; it is a terminal edge, and you can also agree with me, can you not, that it is a terminal edge along the line indicated on that exhibit which is close to the surface as far as you can determine it from actual observation and the development work within the lines of that claim?

A. I think that is so.

Q. You don't understand it to be the top or apex of a vein that has to be an outcrop on the surface of the earth?

A. No, sir.

Q. You recognize the fact that a vein may have a sub-surface apex?

A. Yes.

Q. And you recognize the fact that the sub-surface apex may be shown in a raise where there is an accumulation of the mass of the mountain, either wash or something else, on top of it, that it is the point in the sub-surface apex where that apex comes nearest to the surface?

A. Yes.

793 *A. Yes.*

Q. And it would not make any difference whether this wash; we will say we have a sub-surface apex 100 feet beneath the surface; it would make no difference as far as your testimony goes, as far as your experience reaches, whether the top of the vein is terminated by the wash or whether it is terminated by a fault?

A. It would not matter as long as we get the firm vein.

Q. Did you find firm vein at these points where you came in contact with the Osborne fault?

A. We found firm vein, and beyond it was found drag material, so that, in addition to the firm vein, we found some drag material.

Q. Did you see a condition—I show you Plaintiff's Exhibit No. 16. Did you find a condition at any one of the points that you found the contact between the Osborne fault and the Stewart vein like that?

A. I saw the very place where this photograph was taken.

Q. Is it not solid in there?

A. Yes, but this is not the dip of the vein, down here.

Q. I did not ask you that?

A. Well, that is solid galena.

794 Q. You did find solid galena there?

A. That is vein there, yes, sir.

Q. Didn't you find Galena at other places where you have identified the contact between the vein and the Osborne fault?

A. Yes.

Q. You found the galena there not so as extensive as the one I showed you, but galena?

A. Yes.

Q. You would not call that drag there, would you?

A. No, but there are fragments of galena dragged out into the fault breccia or gouge, that are characteristic of the vein.

Q. Yes, but that is where you find it, in the gouge?

A. Yes. I simply put it in as a reservation.

Q. You would never look for drag in any other place than in the gouge?

A. I think it would be in the gouge or the fault breccia.

Q. And you would call it drag when it is broken away from and is no longer in immediate contact or part of the vein, wouldn't you?

795 A. Yes.

Q. Now, as this comes up against the wall you say that you don't find those conditions of broken ore separated far off from other parts of the vein?

A. We find this, that in drifting along on these levels, they sometimes go beyond the actual termination of the vein into the fault gouge, and in that portion of the drift we find pieces of galena scattered out as drag material in the breccia.

Q. You don't find much evidence of drag?

A. There is a good deal, yes, but I would discriminate, of course, between the bending of the vein and the drag of loose fragments, they are different things.

Q. The bending portion there, is the point where the force has warped the position of the vein as it originally may have been, and the drag is where it is absolutely broken and separated from the vein, and you find it in the fault breccia?

A. That is right.

Q. Now, the Osborne fault in this case, is known to have had quite a vertical displacement?

796 A. I believe it is a large fault, yes; I don't know how large, but it is a large fault.

Q. It is possible that it extended over many thousands of feet, perhaps a mile, in vertical displacement?

A. It is entirely possible.

Q. So that whatever may have been the vertical formation of this vein as it was first put into the earth, those severed portions that existed and have passed away would be high up in the air, would they not, as it went down a thousand feet or more; they would now be entirely lost by the movement of the mass of the mountain over it?

A. Yes. There has been a very considerable separation of those two.

Q. So that a history of this vein extended over a very long period of time, hundreds of thousands of years?

A. A very long time.

Q. Could you make any kind of estimate?

A. I would not care to put it in years. It runs counter to the geological instinct to put it in years.

Q. But you are able to tell, while you cannot give us a definite time, you are able to tell that it is very ancient?

A. Yes, that is true.

797 Q. Do you find any evidence, the character of drag that you have just referred to, in the Clancy fault and the No. 11 fault that is shown on your cross section?

A. No, not that I recollect.

Q. Then you have correlated—I don't know that I quote you correctly; I don't know that you did correlate that, but you have shown on your cross section simply a condition that that section showed, without any drag material between the face of the veins to enable you to identify them?

A. I think I did see some drag in No. 11 fault; I think there is a little drag in that.

Q. Did you find it in any quantity?

A. No, I did not.

Q. Did you find it in the Deering fault?

A. Not that I remember. I cannot remember any clearly.

Q. The fault that you refer to as going along the southern portion of this country and terminating the Stewart vein in its descent into the earth is a considerable fault, is it not?

A. It is a large fault, yes.

Q. And carried heavy gouge?

798 A. A large amount of gouge, yes.

Q. Is it your opinion that that is an absolute termination of the vein at that point where it comes in contact with it?

A. It terminates it in the same sense that the vein on the other side does; the vein stops against it.

Q. In the Osborne fault you don't know what horizontal movement there may have been involved in that fault?

A. I think there was a large horizontal movement. I think the horizontal movement was very much larger than the vertical.

Q. And that may be a fault with a vertical displacement of many thousands of feet, now unknown, and an absolutely unknown throw as far as any horizontal movement is concerned, in such a fault you would not expect to be able to trace by any evidence of drag of a little vein that was disseminated over so extensive a country, to the other portions of that vein?

A. No, I would not expect to do that.

Mr. GUNN: With the permission of court and counsel I would like to ask one question.

Mr. GRAY: If he confines it to one question we will con-

799 sent.

The COURT: Very well.

By Mr. GUNN:

Q. Professor, I understood you to say that this picture you have made on Defendants' Exhibit C represents an abnormal condition of a vein?

A. Yes.

Q. And you spoke of an outcrop?
A. Yes.
Q. And would you call that outcrop an apex?
A. I would call the outcrop an apex if the vein were continuous from the point C to D as it is represented in this diagram, yes.
Q. So that, although this may be an abnormal condition of the vein, that does not change the fact that the outcrop would be the apex?
A. Apparently that would be the apex, I agree with you.

Witness excused.
Whereupon further hearing was adjourned until 2:30 P. M. of this day, Saturday, January 11th, 1913.

800 2:30 P. M., SATURDAY, *January 11th*, 1913.

FRED W. CALLOWAY, after being duly sworn as a witness for Defendant, testified as follows:

Direct examination.

By Mr. GRAY:

Q. State your full name, residence and occupation?
A. My name if Fred W. Calloway, I reside at Kellogg, Idaho; my profession is mining engineer.
Q. What school, if any, did you attend, and what experience have you had?
A. I studied and took the mining course, or began the mining course at the McGill University, Montreal, and afterwards was for two years at the University of Minnesota, Minneapolis. In 1899 I went with the class to Cripple Creek, Colorado, and I remained there a year and a half, practicing as a surveyor. In 1901 I returned to the University and studied during the spring and fall terms, and in 1902 I was assistant engineer on railroad work, on double tracking and division work out of St. Paul, and in the fall of that year I came West to northern Idaho, and I was engaged in the
801 lumbering business for a few months, and in 1902 I was a draftsman in Spokane, and afterwards the same year was engaged in surveying in Sumpter, Oregon.
Q. What have you done since that time?
A. I think I am off in the years; I think that was 1903 that I was in Sumpter. In the fall of that year I went to West Virginia, where I was engaged in coal mining until 1906, when I again came west to Spokane, and a month later to the Cœur d'Alenes, to Wallace, I was assistant engineer with the firm of G. Scott Anderson & Sons until the fall of 1908, November, when I entered the employ of the Bunker Hill in connection with their litigation with the Federal Company, and continued in that capacity until April, 1910, when the settlement was effected. I have been practicing as a mining engineer and deputy mineral surveyor since, until I entered the employ of the Ontario Mining Company in connection with my private work.
Q. I will ask you if you have surveyed the workings beneath the

Ontario mine on the level known as the Silver King tunnel level and below that?

A. Yes, sir.

Q. I will ask you if you have surveyed or superintended the surveying of the workings in the Stewart mine?

802 A. Yes, sir.

Q. I will ask you if the map, Exhibit B, for identification, correctly shows the works of the Ontario and of the Stewart as it purports to show them?

A. To the best of my knowledge, it does.

Q. Have you marked on that map the various workings so that they can be identified?

A. Yes, sir.

Q. You also have shown the outlines of the stopes in the Ontario above the Silver King tunnel level?

A. Yes, sir.

Mr. GRAY: That is all I care to ask this witness at this time. I may desire to recall him later in the trial.

The COURT: Very well.

Mr. GRAY: I now offer in evidence the map, Defendant's Exhibit B.

Map admitted in evidence marked Defendant's Exhibit B, without objection.

Cross-examination.

By Mr. DINES:

Q. You speak of the outline of the stopes?

A. In the Ontario, I mean.

803 Q. You refer to Exhibit B?

A. Yes, the Gray and the Frank stopes.

Q. Have you outlined any stoped in the Stewart?

A. We have surveyed several portions of those stopes and veins which are open at this time. Of course the markings only represent the floors; they do not represent the whole stopes. We have no information as to that.

Q. Are the floors in those stopes indicated by the broken black lines that extend out from the red?

A. The solid lines on that map represent actual workings surveyed by me or under my supervision; the dotted lines represent workings that we have taken from the Stewart Mining Company's maps that were introduced before in this case.

Q. You do not claim that on this map, Exhibit B, you show all of the stopes in the Stewart Fraction ground?

A. No, sir, only those that we could get at. We had no other source of knowledge as to the stopes.

Q. Have you shown them from original surveys that you have made yourself, that is, the work on Exhibit B?

A. The work was my own, or done under my supervision.

Q. Have you compared it with the workings of the Stewart

804 Company, in the same property as shown by plaintiff's Exhibit 1?

A. The maps are on two different scales. The Stewart map is on a scale of one inch equals thirty feet, and ours is on a scale of one inch equals fifty feet.

Q. I understand that, but have you compared them?

A. I have as nearly as I could without reducing one to the other. I think they are very close together.

Q. They are substantially in accord?

A. They are substantially the same.

Q. You think now of no particular point of discrepancy?

A. No, sir.

Redirect examination.

By Mr. GRAY:

Q. The contour lines are also shown, and the lines of the claims on the surface, are they?

A. Yes, sir. The contour lines were actually run on the ground.

Witness excused.

805 WILLIAM H. HERRICK, after being duly sworn as a witness for defendant, testified as follows:

Direct examination.

By Mr. FOLSOM:

Q. State your full name?

A. William H. Herrick.

Q. Where do you reside?

A. At Wallace, Idaho.

Q. What is your occupation?

A. Miner.

Q. How long have you worked as a miner and in what capacity?

A. Since the year 1887, and in all capacities from miner to manager.

Q. In what sections of the country?

A. British Columbia, the State of Washington, and the State of Idaho, and trips into the State of Montana.

Q. How long and what experience have you had in the Cœur d'Alene district?

A. I have been connected with mining chiefly in the
806 Cœur d'Alene district since the summer of 1900.

Q. What experience did you have in the Yreka district?

A. I started in as a miner in Yreka in the Last Chance, and was made shift boss for the Federal Company and continued there for three years.

Q. I will ask you if you are familiar with the ore bodies and works within the Ontario mine and mining claim?

A. I am to a certain extent.

Q. When did you first become familiar with them?

A. Why, I had a very slight acquaintance with them at a previous suit, the Ontario Mining suit. I should judge that was about four years ago, but that was just a superficial acquaintance.

Q. And that involved other workings that are not now in controversy?

A. Other workings, yes.

Q. Are you familiar with the workings in the Stewart Mine?

A. I am.

Q. When did you first visit those workings?

A. The first week in October of last year, for the purpose of testifying at the preliminary injunction hearing in this case.

807 Q. What opportunity have you had to study them since?

A. Why, I spent all of the first week of this month chiefly going through the works of the Stewart and the Ontario Mining companies.

Q. Will you describe the ore bodies in the Ontario mine with reference to their strike and dip, and refer to the plan map, Exhibit B?

A. I examined and went through very thoroughly several times the Frank stope and the Gray stope of the Ontario Mining Company. I find in those stopes from my observation of that vein, that they are on a vein having an approximate course of you might say north and southwest, or north 30 to 40 east and south 30 to 40 west, with a dip at right angles with the approximate strike, southwesterly, and the Gray stope, was, you might say, just about the same condition, except the strike and dip might vary 5 to 10 degrees from that of the Frank ore body.

Q. Following the Gray and Frank ore bodies upward on their ascent, which direction do you go?

A. Northwesterly.

808 Q. In what direction from those ore bodies therefore would be found the top or apex of the ore bodies referred to?

Mr. DINES: I object to that as leading. The word "therefore" would indicate what was meant.

Mr. FOLSOM: Well, I will withdraw the word "therefore".

Q. In what direct-, as a miner, would you look for the top or apex of those ore bodies?

A. Well, I don't think the top or apex of those ore bodies has been disclosed yet; they are still in commercial ore in the top of those stopes as you ascend on the dip of the ore body.

Q. I will ask you if you are familiar with the workings of the Stewart Mining Company; you said you were?

A. Yes, to a certain extent; not absolutely familiar.

Q. What is the general course of the Stewart vein, approximately?

A. Northeast and southwest, but a little more northerly than easterly or westerly; about north 30 to 40 east and south 30 to 40 west, that is, taking it — a whole as you traverse across the vein from one end to the other.

Q. I will ask you if any portion of the top or apex of the Ontario ore body is found in the eastern portion of the Stewart Fraction claim east of what is known as the Siligo or apex drift?

809 A. I don't know as I get that. You asked me if the apex of these ore bodies is easterly of this point (indicating)?

Q. Yes.

A. No, I think it is far westerly of that point, or southwesterly.

Q. I will ask you if any portion of the apex in your judgment of the Stewart vein lies easterly of the Siligo drift or southeasterly?

A. Why not that I can see at all. I went along and saw the termination of the vein on its strike up against the gouge there. I should say that that would certainly not be easterly of that point.

Q. In going northerly from the Gray and Frank ore bodies, or northeasterly in the workings of the mine, do you ascend or descend?

A. Well, you go practically on a level. You go here on the 300 foot level, which breaks into the Gray ore body, and you follow that level right across, until you come to the other end of the vein up against the gouge; you don't ascend or you don't descend.

Q. In constructing work upon a vein, do miners usually
810 construct their drifts upwards?

A. Not usually.

Mr. DINES: We object to that. This case is not to be governed by what miners usually do in the construction of their work.

The COURT: I think the question is objectionable. I will sustain the objection.

Q. Do you find the levels in the Stewart mine driven as a rule along the course of the vein?

A. Why, as a rule you do, but of course there are flattenings in that vein where the tunnel or drift would be in the vein and yet vary in their direct course. When I tried to get the course of that vein I went up in the stopes right through, wherever accessible, and took the line of demarcation of the footwall of the ore to get the course of the ore bodies so that I would not make any mistake about the course of the drift, taking it in case it should not be in the exact course of the vein.

Cross-examination.

By Mr. DINES:

Q. How many observations did you make and at what places, to determine the course of the Stewart vein?

811 A. Wherever I could get into working stopes.

Q. Tell us where?

A. I took it along through on—well, it would be a little above the 300 foot level where they are working in the northeast end of the vein at present, and I suppose it would be called the 300 stopes.

Q. Can you designate by points on Exhibit B?

A. No, I cannot, because in going in the stopes it would be pretty hard to designate your location in the stopes by a point on a drift or some place where there is no direction.

Q. Can you tell between what points that is found?

A. No, that would be too confusing. That 300 drift has been stoped out above there. There was no drift there before.

Q. About what point of the drift then?

A. There is no drift there. The stopes have gone up through the drift and taken the drift out.

Q. Is that the best designation that you can give us so that we can know where you took those observations?

A. I can tell you that I took observations through this stope here, which is the stope over the Fir tunnel level. I do not see any points in that stope to mark it off.

812 Q. Can you designate it on Plaintiff's exhibit No. 1?

A. The stope is not marked on Plaintiff's Exhibit No. 1.

Q. Can you designate the point on the level above, or tell us the points where they are marked on that exhibit?

A. Well, you understand that I took many courses through there, and I might give a course at one point, and I might not get that point definitely enough so it would be approximately a course at another point.

Q. I understand, but you spoke of taking observations to determine the general course of this vein?

A. I did.

Q. In doing that you took certain observations that led your mind to that conclusion?

A. Yes.

Q. All I ask you is to give us the places where you took those observations and what they were?

A. Well, I can start and tell you that I took observations right in the northeast end of the 300 stopes up against the gouge where it terminates there, and I went from there southwesterly on the course of the vein or stope, and took directions as I went along.

Q. And that was on the level?

813 A. That would be just above the 300 foot level, in the 300 foot stopes. My first course would be almost east and west along the gouge, and then the stope turns materially and rather quickly as you go southwest, until you get courses from there at different points through the Frank and Gray ore bodies that were from east and west along that gouge to almost north and south in places along the south side line of the Stewart claim.

Q. How many observations did you take on that 300 foot level between the points that you first designated and the Ontario ore bodies?

A. I took them wherever I could get the observations along the foot wall of the ore.

Q. Haven't you any notes of that or of any of them?

A. No, sir, I did not keep any memorandum.

Q. You never kept your notes?

A. No, sir.

Q. What did you do then when you found your different courses or strikes at different portions of it, what did you do then?

A. When I took these courses I had the maps of the workings and took those courses to verify the courses on the maps in my

814 own mind, so that I was not taking someone else's courses, but was endeavoring to verify them myself.

Q. Then the object of your visits and the taking of these observations was to determine whether the course of the level on the working map was a correct course of that level, was it, the 300 level?

A. No, sir, I was endeavoring to get the exact condition of affairs. That was a guidance to me, and I was trying to verify it as I saw things in the ground.

Q. Did you take in determining the course points on the footwall of the vein? and on the hanging wall of the vein or in the body of the stopes, the body of the vein?

Mr. GRAY: He has answered that three or four times.

The COURT: He has answered it in part but I don't think he has answered all of the question.

A. The greater part of the observations, and I might say almost all of the observations were along the footwall, because there the line between the ore bodies and the footwall quartzite is more clearly marked in the veins of that district than any other part of the vein.

Q. Now then, did you average the different results that you have taken in that way?

A. As I told you, I verified the course on the map, which
815 showed a quick turn near the gouge on the northeast end of the vein, and then got irregular courses which approximately were the courses shown on Plaintiff's Exhibit 1 and Defendant's Exhibit B.

Q. You did not add these together, and take an average?

A. No, sir.

Q. You did not draw a point, when you were trying to get the general course from the extreme points, showing different courses?

A. I did not. As I verified the map of course I did it the same as I can go to this map now and show you what I consider the general course.

816 Q. Now, you were asked about the apex of the vein. I understood you to say when the question was first asked you that the apex to the Ontario ore bodies is at some point that has not been disclosed; is that right?

A. In my opinion it is exactly right.

Q. It has not been disclosed yet?

A. No, sir.

Q. Then in the latter portion of your testimony you said the top or apex of the Ontario was far to the westerly or southwesterly?

A. That must have been westerly or southwesterly of some point, Mr. Dines.

Q. I think I quote you verbatim; I am trying to do that.

A. There must have been a question before that.

Q. You said the apex had not been disclosed, and you said that the top or apex of the Ontario was far to the westerly or southwesterly?

A. Of some point.

The COURT: I think he said northwesterly.

Mr. FOLSOM: No, the witness is right and Mr. Dines is wrong.

Mr. DINES: I submit that to the court, or if the court
817 cannot remember I will ask to have the testimony read by the stenographer.

The COURT: The stenographer may read the testimony.

(Testimony read.)

Mr. DINES: I don't think I quoted the witness wrongly. I think Mr. Gray should be a little more careful in his remarks.

Mr. GRAY: Well, he said southwesterly of a certain point.

The COURT:

Q. Is that the way you wish to be understood?

A. Well, I wish to be understood that the apex of these ore bodies is away up in here, and not away down in here away over across the country.

Mr. DINES:

Q. But you still wish to affirm, as you did in the first portion of your examination, that that apex has not been developed, and your theory is that that apex has not been disclosed by any actual workings upon the ground or anything that would enable you to definitely ascertain that apex?

A. Certainly, sir, because we are ascending on this ore
818 body and we have not reached the top of that ore body here to indicate the top or apex of the vein.

Q. You have spoken of ascending in the direction to the northwest of the Frank ore body in the Ontario?

A. Yes.

Q. I will ask you if you were to go on the vein, if the workings were open on the Stewart vein right through to the apex claimed by the plaintiff near the siligo for apex tunnel as shown on exhibit "B," and following down to this point here where my pointer now is, the back of raise No. 218 east if you would not also ascend on the vein from the Ontario to that point?

A. Well, you would come across here on a level, and then you would run off on the edge incline to the Siligo.

Q. Yes, but assuming that that way was all open, if you would not ascend in going from the Ontario to that point?

A. It all depends on which way you hold your ruler there. You would certainly turn.

Q. Take it first to the point along here to the tunnel. You certainly ascend that far?

A. Yes, that is a higher elevation.

819 Q. And now take a point in the Siligo or apex tunnel, and would you not ascend to that point?

A. Yes.

Q. And going on to the next point, I will ask you if you
820 would not ascend?

A. I don't know anything about that.

Mr. GRAY: Where is that?

Mr. DINES: That is between the breast of the apex tunnel drift or Siligo tunnel drift going in an easterly direction, about, I will say half way, I will put the point half way between that and raise 218 E., the top of raise 218 east; I will ask you if you would not ascend?

A. This portion that your ruler passes through on this level would be higher than this stope; of course, this point that you point to I don't know anything about.

Q. I am asking you if there was any direct connection from this

ore body on the vein to that point, wouldn't you in going from that point to any of these points ascend?

A. You are giving me optional points, and there is some of them that I don't know anything about.

Q. I relieve you of all responsibilities, I will place it all on myself. Take between the apex drift and the top of raise 218 east, half way between, and I will ask you if the Stewart vein
821 were opened up to that point on the line shown on my ruler by a direct connection or working on it, if you would not ascend?

A. I would.

Q. I then come to the top of raise 18 east and ask you the same question; would you not ascend?

A. Yes, sir; it is a higher elevation.

Q. I then come to the end of raise 218 east and ask you if you would not ascend?

A. Yes, sir.

Q. I then come from the foot of raise 218 east on a direct line to the end line, the easterly end line of the claim and ask you if you would not ascend ?

A. Very little. You are getting down to where you have a very few feet.

Q. Yes, sir, but there would be some ascension, would they not?

A. A very — feet; I don't know exactly.

Q. But there is an ascending course of a few feet there?

A. Yes, sir; but you go a little further and you go down.

Q. If you took lines parallel to the east end line of the claim——

822 A. Yes, sir.

Q. I show you one line that I project supposed to be a vertical plane parallel to the easterly end line of the Senator Stewart fraction claim, projected through the foot of raise 218 east, and ask you if a direct line of communication were opened up between the ore bodies under the Ontario and that point if you would ascend in going from that point to this point?

A. You would.

Q. I now come to the top of the raise and still parallel with my end line, and ask you?

A. You would.

Q. Then parallel to my end line I take the set point to which I directed your attention, between the face of the apex drift and the top of raise 218 east, and ask you if there would be an ascension?

A. There would.

Q. Then you do not intend the court to understand you that by the mere fact of ascending along the working which happens to be driven in a northwesterly direction, that that alone enabled you to fix the apex in the westerly or northwesterly direction?

823 A. No, sir, but I do mean to say that the shortest course on the ascension to the top of that ore body would be to the apex, not the longest ascension away off at a tangent.

Q. Are the Ontario ore bodies a part of the Stewart vein?
A. I think so; I do not think there is any doubt of it.
Q. You think they are one and the same vein?
A. I think they are, yes, sir.
Q. Did you go up raise R 2 west?
A. Yes, sir.
Q. On the southerly side line of the Stewart Fraction?
A. I did.
Q. Did you find there the termination of the vein, of the Stewart vein, as it approached the nearest surface?
A. I would not wish to say. I went up to the top of that raise and there was quartzite in the raise and just behind the timbers there was a gouge.
Q. Did the gouge seem to stop the further upward course of the vein at that point?
A. I would not attempt to say.
824 Q. You do not know?
A. I know what it is supposed to do, but I do not know from my own——
Q. (Interrupting.) Well, what is your best judgment and opinion on it? You are testifying here to the apex; now, what is your best opinion, does that vein stop against the gouge as shown in raise 2 W or not?
A. I think undoubtedly in the course it is taking there that it stops there; whether it goes on at another course, I don't know.
Q. How far are you beneath the surface at the top of that raise?
A. As I understand, it is very close, probably one hundred feet, probably less than one hundred feet.
Q. Even if it were extended beyond, it would very shortly come to the surface in its own course in the upraise, wouldn't it?
A. Yes; it would unless it was broken and thrown in another course.
Q. And that you are not able to say?
A. No.
825 Q. You found stoping done between this raise and the Deering Crosscut; you went in a general north 30 to 40 degrees east, did you not?
A. Yes, sir, stoping.
Q. Are those stopes continuous?
A. Most of those stopes are not accessible, I guess; there are very few of them accessible.
Q. You found the stoping done there, did you not?
A. Yes, sir, indications that there had been stoping there—chutes.
Q. You are satisfied that the Stewart vein has been there?
A. Yes, sir.
Q. And those stopes are a part of the workings on that vein?
A. Yes, sir.
Q. Have you ever been up in any of these stopes?
A. In a very few. I think there was one raise there that went

up into a small stope; I am not certain of it, and I would not care to get right down to too close a point.

Q. Do you think, from what you saw in there, that the part of the vein nearest the surface as you go north thirty or forty
826 degrees east is within the lines of the Senator Stewart Fraction or not?

A. I do not know as I got that correctly.

Q. Kindly read it? (Question read.)

A. Yes, sir.

Q. You think it is? Is that true of that vein until you come up to what is called the Siligo tunnel on exhibit "B"?

A. Yes, sir.

Q. And called the apex tunnel on exhibit 1 of plaintiff's?

A. I think it is.

Q. You think that is true?

A. Yes, sir.

Q. Did you find a vein in this apex tunnel?

A. I am not a geologist, Mr. Dines, and things are rather mixed up in that tunnel, and I do not care to qualify any particular statement about what is in that tunnel.

Q. I will say to you now, that I am not going to ask you any difficult geological questions at all; I am simply asking you
827 from your experience as a miner, did you find a vein in that tunnel?

A. Yes, sir; we found a vein probably going along through that fault or gouge or something and it looks as if it might be a vein near the surface.

Q. You found a fault in the western portion of it down here near where what is called the Clancy fault comes in?

A. Yes, sir.

Q. Now, in going on easterly or northeasterly to the point where the tunnel comes into that, were the workings on a vein?

A. Yes, sir, I examined a stope underneath that.

Q. The workings of the tunnel itself below the footwall of the vein?

A. Well, what looks to be the foot wall, it goes along the footwall.

Q. If you had been mining yourself in there you would have taken that for the footwall of the vein, wouldn't you?

A. Very likely, yes, sir.

Q. And as you go on past the point where the upraise comes in and on to the face of the drift as far as you saw it, state to
828 the court, if you please, whether or not that was all on a vein?

A. I would not say that it was.

Q. What portion is not?

A. There is a broken up condition here as you approach the northeast end of the main drift.

Q. That is, you mean this portion here where it seems wider on your stope?

A. That is caved in right there; it is wider there.

Q. Is it about there that the Osborne fault is disclosed that you noticed the gouge or fault, right there at that point?

A. I would not care to say that it was the Osborne fault.

Q. What kind of vein material; I do not mean to classify it geologically, but compared to the commercial ore, the galena that is shipped here; did it appear to be a solid vein or a vein that was approaching the surface, the top part of it?

A. Well, it had the appearance of both; you might say it was a vein there; and you might say it was disturbed by surface conditions.

829 Q. Did you go into the raise that goes from the stopes below on up through the tunnel to the surface?

A. I did not get in that raise.

Q. So you do not know what that discloses?

A. No, sir.

Q. Now did the portion of the vein that you see at the wall here in the portions that you have testified to compare with the appearance of the vein at the tops of these stopes or any of these stopes that you see where you get outside of the commercial ore?

A. You could get a better idea of the stoping here than you could down in through here. This stope here seemed to be a regular little stope.

Q. Did you notice a place here where it caved right down both west and east, west of the portion of the tunnel west of the portal of this crosscut, and east of it, where the vein had caved right in down on the stopes?

A. Yes, sir; there are those places.

Q. That is a pretty good indication that you are right at the——

A. —top of the stoped ore.

Q. (Continuing:) Top of the stoped ore; and the vein was right there near the surface, wasn't it?

830 A. I don't think there is any doubt of it.

Q. Then you would be able to tell the court, wouldn't you, that in those workings as far as you could judge that you had disclosed the top of the Stewart vein as it approached the surface or nearest the surface?

A. One part of the Stewart vein; it is not the top of the Stewart vein, a portion of the top.

Q. A portion of the top of the Stewart vein?

A. Yes, sir.

Q. Yes, sir. There are stopes in here a very short distance of the tunnel, above, are there not?

A. Yes, sir, just below.

Q. Just below?

A. Not very far.

Q. When you come to the raise, you find in that raise, the top of raise 218 east——

A. Yes, sir.

Q. The vein disclosed lying against the Osborne fault, do you not?

A. I don't know.

Q. Do you find a vein lying up against——

A. (Interrupting.) Some gouge matter.

831 Q. (Continuing:) —some gouge matter; you do not know what the gouge matter is, but you remember of there being a vein there?

A. I don't know that it is the Osborne fault because I did not see enough of it to say it was the Osborne fault.

Q. I understand. Now, I will ask you if that part of the vein was as near to the top as you could go in going up to your northerly side line or going up to the surface, was there anything there that would show any higher top or any higher part of the vein, if you prefer that term, than was seen in that upraise?

A. I consider this a higher part of that vein.

Mr. GRAY: The Siligo tunnel?

A. The Siligo tunnel.

Mr. DINES:

Q. Yes, sir; it is higher, no doubt about that, but I am asking you now when you get to right at this point, confining your attention to the vein as it is shown there in the top of that raise?

A. Yes, sir.

Q. Could you go any higher on it?

A. Yes, sir, go higher going up to this apex in the Siligo tunnel.

832 Q. No, I mean this way, could you go up any higher on it in a northerly direction?

A. I don't know; you might have to go through the gouge there to get to it.

Q. You do not know that there is any vein beyond the gouge there?

A. No, sir.

Q. Did the vein terminate at that point?

A. It certainly did.

Q. It certainly did?

A. Yes, sir.

Q. How was it along the raise, was not that raise all on vein?

A. Yes, sir; that raise in part connects with the stope.

Q. How was that? Was there any higher part over that, I am not referring you now to the part going back on what we call the course of the apex, but was there any portion of the vein at that point that you could follow in going on a line parallel to your end lines than is right there in that raise?

A. No; that is the end of the vein.

833 Q. That is the end of the vein there?

A. Yes, sir.

Q. And how about at the point where that vein crosses the end line of the claim, of the Stewart Fraction claim?

A. That is right about where the ore peters out going to the northeast there, is in that stope.

Q. Could you going along up the end line or going along on the vein parallel to the end line go any further up?

A. There is a little ore shows in this 314 raise, just a small amount at the bottom.

Q. But that is before you cross; I say, at the point of crossing?

A. This raise does not cross the end line.

Q. But here it cros-es?

A. That is a stope.

Q. That is a stope?

A. Yes, sir.

Q. Can you go on that body that is disclosed right in the stope?

A. Go any higher outside the vein?

Q. Go any higher either on the end line or on a plane par-
834 allel with the end line?

A. No, the end line represents the end of the vein.

Q. You have had a good deal of mining experience as manager of mining properties, haven't you?

A. I have never managed any large properties.

Q. You have been in litigation and studied veins that far?

A. I have studied conditions as far as a miner would usually study them.

Q. Is it unusual to have one point in an apex as you go along the course of an apex lower than another point?

A. It would be rather unusual to have the apex all on the same level.

Q. You think it would. Take an apex crossing on the side of a steep mountain——

A. I say it would be unusual to have the apex all on the same level.

Q. I misunderstood you. Then it is quite usual to have some difference in elevations between the points of the apex as you go along the course of the apex?

A. Certainly.

Q. I will ask you to look at the model that is here on the
835 desk and designated as plaintiff's exhibit 15-A——

A. Yes, sir.

Q. And please state if that fairly represents as far as you could determine it and as far as it purports to represent the way that vein twists and turns in going to the Osborne fault?

A. No, I would not care to say that that represents anything to me; I don't know anything about that model.

Q. Were you not with them the other night when they took it apart and studied it?

A. I was in here a few minutes, but I had nothing to do with it.

Q. Didn't they take the sections out and make a careful measurements to see if anything was wrong with it?

A. I believe sections were taken out, but what they did with it, I don't know anything about it.

Q. They were here measuring it and studying it?

A. I don't know anything about that.

Q. Weren't you with them?

A. I was here a few minutes that evening. I know the model was taken apart, but what was in it I don't know, I don't profess
836 to know, because I had nothing to do with it whatever.

Q. You have made mining locations, haven't you?

A. I do not think alone and unassisted I ever made a mining location.

Q. Well, you know about—in a general way, you have assisted in them,—have you made surveys of them?

A. No, I have done prospecting, but I had a partner who did the locating; I was not with him. I have never located a mining claim in my life.

Q. I will assume a case to you that you need to take no responsibility as to the hypothesis that I make. I will assume that for you. I will assume that there was a vein the course of which at its apex, the course of the apex is as shown here through its Siligo tunnel and all of it connected together, shown on plaintiff's exhibit 3; I will assume that there has been an erosion of the side of the mountain, and that the vein is eroded; originally it was about as I put my pointer on a level, the points of apex on a level with this, that by erosion it was worn down until that edge of the vein in that triangle was dissipated and gone and it left this part of it; would you
837 say that the cause of the erosion that had taken away the upper portion of it, that it was any less an apex than it was when it had the straight course out there?

A. I would not say the erosion affected the apex any more than it affected the end boundaries of it.

Q. It would still be an apex?

A. No, I did not say that; I said I do not think that the erosion would affect the apex any more than it would affect an end boundary.

Q. In other words, if the point I assume was correct and that line was a straight line in a direct easterly course to the end line, and is an apex, and by erosion it was worn down that side of the hill until it appears as shown in Exhibit 3, it would not be any less of an apex because this point up here is more than this point here, would it?

A. That is just a supposition on your part, and I would like to get a supposition that would give me something to go by.

Q. You have stated the apex of this vein now, and I am asking you if you would consider it to be any less of an apex because it was worn down in that way?

838 A. It would not.

Mr. GRAY: You are referring to a miner's apex and not a legal apex.

Mr. DINES: Yes, sir.

A. I am testifying to the conditions as I saw them.

Q. I understand. Now then, assuming it is worn down by erosion to the condition that is shown on Exhibit 3, the portion extending from the apex to the easterly end line, and that you as a miner, having seen some outcrops up here on the hill were led to sink a shaft, but you struck that ore there as you went down from the surface with your shaft, would you think you had the top of the vein?

A. I would not know until I had done work enough on the vein to determine that for me. I would not try to determine it from one little shaft.

Q. You would not think it was less an apex because there had hap-

pened to be some point up here on the course of the apex that was a higher point?

A. No, but if in this case, as you say, I sink here and got an apex and I drifted along here on the vein, I would then call this
839 my apex up here; I would not call that an apex at all.

Q. You mean you would call this edge over here an apex?

A. Yes, sir, I would call this edge over here an apex.

Q. That would be assuming contrary to my supposition. I said that it had been originally this way and worn down to that point?

A. I would not care whether it was this way or that way; if a vein laid that way and I drifted across that way, it would make this the end.

Q. Do you say the vein lies that way?

A. Which vein?

Q. The Stewart vein that we are referring to; do you say the Stewart vein lies that way?

A. Which way?

Q. This way?

A. I say the Stewart vein lies this way, yes, sir.

Q. That is, by this way you mean what, what course?

A. Approximately north thirty to forty east and south thirty to forty west in that vein as I saw it lying in that hill.

840 Q. Isn't it true, if you take these levels of the workings inside of the Stewart Fraction, that they show as you go along toward the end line a decided tendency of the vein to bend around in the form of a crescent toward that east end line?

A. Yes, I told you that I took a course east and west.

Q. Now, answer my question?

A. Yes, sir.

Q. That is right. Then you would not in this case find a vein clearly lying up one way, as you indicated it with your pointer, that is north thirty to forth degrees east, would you?

A. No, I said the course of that vein for the greater part of the vein is disclosed from the south side line of the Ontario up to the fault, is mostly that direction until you get near the fault.

Q. And there are points in the body of that vein as you go into it where you cannot distinguish course from dip, isn't that true?

A. I don't know as it is.

Q. Take the flat places in that vein?

A. Yes, sir, up in the old lower Stewart tunnel.

841 Q. You cannot tell strike from dip?

A. I would not say that.

Q. I ask you if that is not a fact on these curves?

A. Well, if the course of the vein is flat any place it would be hard to say which is which; of course, you could take any course you wish to.

Q. There seems to have been a decided bending and mixing up in the body of that vein in there by some disturbance, does there not?

A. Apparently.

Q. You testified, did you not, Mr. Herrick, or made an affidavit in this case on the preliminary injunction?

A. I did.

Q. I will ask you if you did not use in that affidavit the following language, "there is no connection on a vein or on ore between the workings in the east end line of the Senator Stewart Fraction claim and the ore bodies in the Ontario claim." I call your attention to the language you used?

A. Yes, sir; I probably did. At the time I examined these workings the Gray stope was not connected with the 300 west
842 drift.

Q. Do you know when that connection was made?

A. No, I don't. I say it was not connected because I was not able to see it, or supposed it was not connected.

Q. But there was a connection between the Frank ore body and the other at that time?

A. Yes, sir, but there was a fault that you had to go through, waste matter in the drift or crosscut to get into that.

Q. Is that what is designated here as fault No. 11?

A. I believe that is it, yes, sir.

Q. You did not believe at the time you made this affidavit before his honor that the ore bodies beneath the Ontario surface were part of the Stewart vein at all, did you?

A. I did not examine it thoroughly enough at that time in order to have a decided opinion on the matter at all; I simply said——

Q. (Interrupting.) You said there was no connection?

A. No connection on ore.

Q. But there was, you say, this connection on ore?

Mr. GRAY: No, he did not.

843 A. No, I say that connection was broken by a fault.

Mr. DINES:

Q. By a fault?

A. Yes, sir.

Q. That connection was there at the time?

A. Yes, sir.

Q. What is it that has made you change your mind since then and you tell his honor now that you do think these ore bodies in the Ontario are part of the Stewart vein?

Mr. GRAY: I object to that question; it is not fair. He did not say it was not at that time; he has not necessarily changed his mind.

The COURT: I understand the witness thoroughly. It is not unfair to me; I understand him.

Mr. DINES: I do not wish to be unfair to the record. The question comes up, your honor, whether he says—and I am perfectly willing that he should have full opportunity to explain——

Mr. GRAY: The objection has been overruled.

Mr. DINES: One moment, please, Mr. Gray, I am addressing the court now and I prefer not to be interrupted—there is no connection on a vein or on ore between the workings in the south end
844 of the Senator Stewart Fraction claim and the ore bodies in the Ontario claim. Now, the word "connection," if the witness meant there that it was a working on ore, would be one thing, but the word "connection" bears a conception at least of saying that

there was absolutely no connection at all between those ore bodies and that vein. Now, a physical connection, that is, a working underground is one thing, and the connection that is put here is another; it is on that, that I wish to interrogate him.

The WITNESS: Mr. Dines, I do not think I would say there was no working connection when I went through the connection myself from one place to the other.

Q. You must have meant that that was not a part——

A. (Interrupting.) That the ore was not continuous where I went through from one to the other.

Q. Did you mean to be understood in that affidavit that the ore was not a part of the Stewart vein?

A. No, sir; I did not mean to be understood on anything except what I said.

Q. Now, you said you went in ascending—if I quote you correctly, and you correct me if you do think I do not quote you fairly——

845 A. Yes, sir.

Q. I understand you to say that in ascending from your Frank ore body to the westerly part that you took that way because it was the shortest connection. Now, was I mistaken or not?

A. Took which way?

Q. That you took the way to the northwest looking for an apex to the northwest because it was the shortest connection?

A. I said in ascending you would ascend on the stope, take the shortest way to the top of that stope.

Q. That is the reason you took it that way, simply because the workings were shortest that way?

A. I took it because it was at right angles to the stope.

Mr. DINES: That is all.

Witness excused.

Thereupon an adjournment was taken until 10:00 o'clock, Monday morning, January 13, 1913.

846 MONDAY, *January* 13, 1912.

WALTER H. WILEY, after being duly sworn as a witness for the Defendant, testified as follows:

Direct examination.

By Mr. FOLSOM:

Q. State your full name?

A. Walter H. Wiley.

Q. Your residence?

A. I live in Los Angeles.

Q. What is your occupation?

A. That of a mining engineer.

Q. How long have you followed that line of work and what preparation did you have?

A. I graduated in 1883 from the Colorado State School of mines.

Prior to that time I had worked as a miner. Since 1883 I have been continuously engaged in my business.

Q. I will ask you if you are familiar with the vein in the Yreka Mining district, Shoshone County, Idaho?

847 A. With a portion of them.

Q. One more question with reference to qualification. What experience have you had in the examining and operating of mines in a little more detail?

A. Well, for the past thirty years I have been continuously engaged as a miner or mining engineer, and during that time my work has taken me over the greater part of the Western United States, including trips into Alaska, British Columbia and the Yukon territory, into a number of the states of Mexico, into South America and Asia.

Q. Well, how much time have you spent in the Cœur d'Alene district altogether, particularly the Wardner end of the district?

A. The total time would aggregate several months in the Wardner-Kellogg section.

Q. I will ask you if you are familiar with the vein or vein and ore bodies in the Ontario mine involved in this litigation and the veins and the ore bodies within the Stewart mine adjoining it?

A. I am.

Q. Will you tell the court in your own way, using such

848 models and cross sections as you have prepared, what relation the ore bodies bear to each other and to the claims where their tops or apexs are, and such other matters as may assist the court in determining the controversy?

A. The plan map which has been introduced as Defendant's Exhibit "B" show the workings on a scale of fifty feet to the inch. It is necessarily a horizontal projection, on which all the works are shown upon one plane. With the idea of making the relative position and the conditions of the workings clearer, we have had constructed on the same scale as the map a model which shows the workings the same as the plan map but at their correct relative elevation. The map upon the base of this model is the same as Defendant's Exhibit "B." The skeleton frame work above this map is simply a representation of these various workings at the proper elevation, each working on the model being shown above its position upon the map at the base, and at the elevation which it actually occupies in the earth. The drifts and raises are shown by this model, which has been painted three different colors. The gray color represents the county quartzite, the red the veins, and the blue the faults.

849 There are numerous small faults throughout this section which are not shown; there are also numerous workings between the levels, stopes, which are not shown; they are today inaccessible, and we had no data whatever to represent them. In certain places stopes are shown as the sill floors where the levels are widened. The two ore bodies in dispute, those of the Frank stope and the Gray stope of the Ontario Mining Company are shown in their entirety as they were at the time of the survey. The top of this model shows the surface of the ground, the green lines repre-

senting the contours corresponding to the contours on the map, the actual elevation being marked by the letters and figures upon the green. The base of the model is placed at an elevation of 2,200 feet, so that, to determine the distance from that base to the surface, if we take the highest contour, 3,850 feet, we have a total vertical range of 1,650 feet between the base of the model and the top.

The ore bodies in the Frank and Gray stopes of the Ontario Mining Company are situated vertically beneath the surface lines of the Ontario at a distance varying from 600 feet at the top
850 of the Gray stope to nearly a thousand feet at the bottom of the Frank stope, this difference in elevation being caused largely by the fact that the country rises rather steeply in a southwesterly direction. The north upon this model is, as shown upon the base, square with the side line at the base of the model.

These stopes, the Frank and the Gray, are separated in the mass of the earth, as shown by their separation upon the model. A scale of fifty feet to the inch, shows the separation to be about 140 feet at the nearest point of approach of these ore bodies. In going upward from these ore bodies the top immediately above the ore at a higher elevation has not been developed; the ore bodies are continuing on their upward course in the ground as far as at present developed, with the exception that between these ore bodies there is a fault which has been called No. 11 fault, and the upward ascent of the Gray ore body is interrupted by this fault, which lies between the two, the fault dipping to the south at an angle of about 30 degrees so that as we go upward on the Gray body we must go further north in order to continue the ascent beneath that fault.

The only fault which is shown there, that is, by the blue
851 coloring at different points upon the levels, is what has been called the Osborne fault. This is the largest fault of the lot, and it is shown by the sheet of blue celluloid, this being fastened to the levels at the point where it is actuallly developed, and the resulting warped surface showing substantially the location of this fault. It extends, of course, deeper into the earth, and also in every direction, beyond this sheet, and the representation is limited to the portion which is developed, and where we know its exact, or nearly its exact location.

By following the red color upon this model we can see the connections in ore from the Frank and the Gray stopes with the workings above. From the Frank stope we can go through a portion of the 300 foot level of the Stewart mine up through raise 328 east, to the 200 foot level, and from that through raises and stopes, through raise 223 to the lower Stewart tunnel level. In following through these raises we go through rather irregular workings, in many places closely timbered, sometimes a raise for a short distance, then a nearly horizontal working, and on account of the close timbers I have not been able to trace the vein at every point
852 through this work, and my knowledge of what there is in these raises at some point is necessarily an inference from what I see above and below the portions which are tightly timbered, but I fully believe that these raises and the various workings do

follow continuously upon the vein from the Gray and from the Frank stopes to the Stewart tunnel level.

The lower Stewart tunnel level itself is very badly caved. There is a considerable portion of the level itself which is not at all accessible, and the red color through those portions where it is represented as upon the vein is based again upon a belief, simply, that the vein extends through those portions. We see it to the south of this caved portion and we see it to the north; we have had the plaintiff's exhibits showing stoping through that section, but I have no reason whatever to doubt that the vein is entirely continuous on the Stewart lower tunnel level through that portion, although I have not been there at all myself.

Above the lower Stewart tunnel level we have several raises which are accessible generally, extending at varying heights above. These raises which are colored, five of them—or six, including raise
853 No. 4 east, are all today accessible, but the timbers are very badly crushed. The most southerly one at the end of the Stewart tunnel level is up about 150 feet, and is continuously upon the vein, and the vein shows at the top, still upward; there is ore actually in the top of this raise, but of low grade, and poor ore which probably would not pay at that immediate spot to mine. North of this, at a distance of about 200 feet, about fifty feet north of Raise No. 223 west is another raise which is not accessible, which is left colored Gray, so it may be that a portion of that or all of it, as far as I know, is in the vein. Still further north we have the two raises, the highest of which is marked raise No. 2 west. This is located exactly upon the south side line of the Senator Stewart Fraction claim, and extends upward from the tunnel level for a distance of 147 feet. It is closely timbered, and the vein cannot be seen in this raise until near the top. That portion I know is in the vein and that is colored red. At the top of this raise, cutting squarely across, there is a streak of clay gouge. This gouge appears at about—This gouge dips at about 30 degrees in a northwesterly direction. There is no working above this or to the side to
854 enable one to determine whether the vein continues above or not, but it is certainly interrupted by this fault, and it has been called the Clancy fault. There is one other working, raise No. 7, which starts up back in the footwall country and continues up for about the height of 100 feet, where there is galena ore shown in the top of that raise. The stopes which I presume originally extended from his raise are now entirely inaccessible.

There has recently been run a branch from this raise shown by the working marked No. 7 raise, and in the upper portion of this raise a fault has been developed, having an appearance and direction such that I believe it is the same fault as developed in the top of raise No. 2 west and called the Clancy fault. At this point the same or a similar condition of affairs existed as far as determined above this fault. It breaks through into old workings, and the crosscut is shown upon this model, which is taken from the plaintiff's map, and I have seen nothing of that crosscut except that there are caved timbers. I cannot determine from this showing alone

whether it is a crosscut or a stope, but the crosscut is put on the model from plaintiff's map.

855 In order to find what there is in the mine above this Clancy fault, we have to ascend to a higher level, the upper Stewart level which is an old working tunnel which from the surface has a crosscut curving around through the quartzite country. Out near its southern end a drift has been run out a distance of some three hundred feet, which follows a vein. There is some stoping from this level shown by the small workings, which are perfectly inaccessible today. There are several small chutes, three at different points, extending up from the crosscut in a vertical way, which are not at all accessible, but which indicate to the miners that there is some working of some sort above this drift or crosscut back in the foot of the vein. The only point higher up is a small working called the Vent, on the surface of the ground, where there can be seen a square box projecting out from an upraise at the surface of the ground. This is inaccessible, but it indicates that that was some working from somewhere below which reached the surface of the ground and the box was placed in it to keep an air current going through.

856 The vein which is shown in this upper Stewart tunnel level is a similar vein to that which is shown in the lower Stewart tunnel level; it is a fissure vein, the same as below, a fissure vein which has been very materially enlarged by replacement after the formation of the fissure. We see at the southern end a couple of faults, one coinciding in direction largely with the vein, another running nearly across the direction and dipping to the southwest. The fault which is shown at the southern end and dips in a southwesterly direction, does interrupt the continuity of that vein, but not in a direction as it descends toward the lower Stewart tunnel. You can go downward from this upward Stewart tunnel through a shaft known as the Samuels raise, through a crosscut at the bottom, and reach the lower Stewart tunnel level. These workings, like so many in the mine, are largely caved, and while you can go out for a short distance into several drifts which have been run, I have not been able to get into those drifts sufficiently to know what they disclose. From my own knowledge I only know that in this upper Stewart tunnel level we have a vein dipping at an angle of thirty to forty degrees, and which I have seen extending downward in the bottom of this level; in the lower Stewart tunnel we have a vein similar, which extends upward at a slightly steeper dip from the tunnel up at about forty-five degrees and this

857 vein continuing up was interrupted by the Clancy fault. The amount of the throw from the Clancy fault cannot be determined from any workings which I have been able to see; I can only by inference say that, having a vein extending downward at an angle of forty degrees from the upper Stewart tunnel, if that vein is not interrupted by any fault other than the Clancy fault, it will meet the plans of the Clancy fault at a distance somewhat in the footwall of the vein which extends upward from the Stewart lower tunnel level. The dip of this vein which continues down through the workings, through the Gray ore body, is shown approximately

as I hold my pointer. There is no material change in the course downward of the vein to actually connect those upon one continuous vein from the apex in the Vent to the Gray ore body below or to the Frank ore body. In order to make this condition somewhat clearer I have made a cross section through that section, but not exactly at right angles to the vein, but taking the highest point, the face at the surface and the lowest point in the Gray ore body. This is section No. 5.

Section No. 5 marked for identification Defendant's Exhibit "J."

858 The WITNESS: It is a section of the earth, supposing it to be cut down vertically as indicated by my pointer, and is shown by the model immediately beneath where the section is made. This is the same scale as the model, and shows at the surface the vein. Below that, extending upward from the tunnel a small raise, which is now inaccessible; it was put on there from information furnished by Mr. A. M. Porter. The upper Stewart tunnel is shown at the elevation of 3,100 feet, corresponding to the point on the model; below that the vein is projected down as shown by the dotted line on a dip of forty degrees, this being the steepest dip which I have observed in the upper Stewart tunnel. In the lower Stewart tunnel, down probably at an elevation of 2,900, it shows the vein extending up at a dip of about forty-five degrees until it meets the Clancy fault. If the vein from the upper Stewart tunnel continues down, as I believe it does, possibly with minor interruptions from subsidiary faults such as we find at numerous points in the working below—it will meet the Clancy fault at a point as shown upon section 5, about sixty feet in the footwall of the vein as developed in the raises ex-
859 tended upward from the lower Stewart tunnel level. Below this point the raise continues, and the vein continues below the Lower Stewart tunnel and is shown in dotted lines, because I do not know its exact course, but I have no doubt whatever that it does continue substantially as shown through the intermediate level, through the stopes and down to the 200 foot level and for a distance below that. Here it meets a serious interruption, the No. 11 fault; which dislocates the Frank ore body and separates it from the Gray ore body is cut by this line of the section, and the ore body as shown by the Gray stope lies to the right or to the east at a distance of about 180 feet from that portion of the vein going downward from the working above; in other words, the dislocation of the No. 11 fault is to my mind at least three times as great in his section as is the probable dislocation of the vein upon the Clancy fault.

Now, the most pronounced feature as we go to the north upon these various drifts is the fault which has been called the Osborne fault. I don't know whether it is the Osborne fault or not, but I do know that it is a big fault. There has been a large amount of throw upon that fault, and I will speak of it as the Osborne, although I
860 do not, by doing so, vouch for its being what has been called by the United States Geological Survey the Osborne fault. On the lower fir tunnel, which is some 860 feet in length from its mouth out to the northeast, from the portion shown upon the model, we go through the black slates and come to the white quartzite which

constitutes the country rock throughout the section of the Stewart and Ontario mines, and at that place we come into the Stewart vein. This vein has been followed for a distance south of the quartz by the workings on the 400 or fir tunnel level, but after about 200 feet to the south of the northern end the workings go back—a series of workings go back into the footwall as shown by the Gray coloring, and in order to reach the southern extension of the vein we go through crosscuts to the East. We can go upward on the vein to raise No. 410, which is not accessible at present, however, but through other raises and through the stopes, and we can go from the stopes in the portion of the mine colored red to the east, through a series of flat stopes, and get back upon the 300 foot level in drift No. 305 east, following continuous stopes all the way; so that the drift on the 300, No. 305 east, is upon the same vein as the drift on the 400, 409 and 415.

861 Going northerly on the 300 foot level, or northeasterly, we again go into the Osborne fault where it has been developed both by a drift on its strike and by a raise, 314 East, going upward. We can also go south on the 300 foot level, I think continuously on the vein; I say I think, simply because there are portions which are timbered where I cannot see it, but upon the vein, I will say, continuously to the Gray stopes. We come into the side of the Gray stope, which extends now upward above this level to a height of 33 feet, following on a slightly rising course, simply the grade of the level, a few feet in an upward direction, until we meet an ore body dipping downward at right angles to the drift, and as I say, extending upward to a height of 33 feet above this level. If we go through the footwall portion of those workings we go through country rock in order to reach the Frank stopes, through country rock showing a separation of more than 150 feet on the 300 foot level between the Frank and the Gray stopes.

Going upward upon the Osborne fault from this level we rise at a pitch of 49 degrees for a distance of 85 feet through raise 314 east. At the bottom of this there is excellent galena ore, and it extends upward to a height of about 25 feet above the level. Above

862 that the raise is entirely barren; it is a white clay, clearly different in every way from the Stewart vein. The clay is in places dark colored, has a narrow streak, but generally speaking it is very light in color. At a height of 85 feet in this raise above that, the raise is much more nearly vertical, a dip of about 80 degrees; this is due to a splitting of the fault, and the raise followed the steepest part. I was up that raise on a day when I could see the top, when they made the turn, and the footwall streak was followed at a dip of 49 degrees, and continued up that raise, and the raise followed on the steeper portion of the handling. This indicates a division of that fault to the north, as we rise, and simply shows that above this point the northern or footwall side of that fault has not been developed. If it continued in its direction, the fault in the upper working will be quite a number of feet north of the fault as developed and the plane of the fault which does cut off the vein—it is cut off by the southern face; in other words, of the fault, and if this continued as two faults above there, there will be a section between the two, in which we do

not know what exists; there may be more vein material in that section before the final and complete severance of the vein by the
863 Osborne fault. This fault has further been developed at about the point of the cutoff of the vein in raise No. 218 east, which continues from the 200 foot level up through the hundred to the upper Stewart tunnel. The 100 level is not accessible at this point; the raise goes through it, but you cannot get at all into the level, but in the upper Stewart tunnel level.

Q. You mean the lower Stewart level, don't you?

A. Drift No. 105. Drift No. 100 is not accessible. The lower Stewart tunnel level can be reached through this raise, and is accessible, except that near the northern end there is a tight bulkhead, so that you cannot see what is the condition in the face of the drift. This lower Stewart tunnel at about 60 feet from raise 218 east shown an excellent vein with much galena through it. This is the highest point at which this vein can be seen, with one exception, that through a raise in the Deering crosscut you can reach a point approximately 25 feet higher in elevation, where there is a section of what I believe to be the same vein shown. Doubtless this was all connected through stopes at one time. This little work therefore, above the Stewart tunnel level, which is reached by the raise from the Deering
864 crosscut, is the line upon which the vein which has been followed from below can be seen.

There is above this something in the way of a fault, another fault, different from the Clancy, and perhaps different from the No. 11. This fault can be seen in the crosscut below, and also in another crosscut about 40 feet to the south, simply as a plain gouge cutting through, so that from this disclosure there is evidence of a fault dipping somewhat in the nature of the Clancy fault, and interrupting the portion of the vein, which continued downward to the Gray stopes from that portion lying to the north, and which can be followed downward to the Frank stopes; in other words, there is an interruption, and a certain state which is exhibited in this model, as shown by the blue color, varying from 160 feet in the southern end to a narrow space in the center of the model, and widening again in the section between Drift 4 east on the lower Stewart tunnel level and the drift to the south.

There is one point, I should say, of this area in drift No. 100 and the workings thereabouts, which are painted gray upon this model, where it has been said these portions come together and one
865 can go on ore from that portion which is followed up from the Gray stope to the other portion which goes downward to the Frank stope. That section is entirely caved, and I don't know what is in there. If I had been through there and had seen ore, there would be some red color on the model through there, through the drifts or stopes which could be shown at that section.

Q. Before proceeding, Mr. Wiley, with that part of the model, I will call your attention first to the portion on the west end of the Senator Stewart Fraction, running at an angle with the north line of the claim, and ask you what that is?

A. To the north, disclosed in the old lower Stewart tunnel at the point about 400 feet in from the mouth of the tunnel, there is a

drift running in a southwesterly direction and another in a northeasterly direction. These are colored blue upon here, as following a fault, and there is also a little red material, showing that that is a mineralized fault. A little above this and to the south is this large stope working colored red. There is a very considerable body of ore in there, lying rather flat, disconnected from any of the other workings, a-d as far as I know having no relation, although it may
866 have been a faulted section of this vein. I don't know as to that.

Now, we have one thing which is apparent both upon the maps and upon the model as regards the strike of this vein. While it has many variations, it is comparatively regular if you take an average strike. It is comparatively regular, while there are many local variations, if you take average dips. The strike of this vein, taking its direction as shown by the various workings in the upper Stewart tunnel is north 31 degrees east for a distance of 290 feet. The strike in the lower Stewart level is north 33 degrees east for a distance of 900 feet. The strike in the 200 level is north 42 degrees east for a distance of 600 feet. The strike in the 300 level is north 34 degrees east for a length of 800 feet. The strike in the 400 foot level is north 21 degree- east for a distance of 300 feet. The strike in the Gray drift is north 30 degrees east for a distance of 330 feet. The strike in the Frank drift, the drift under the Frank stopes and continuing northerly is north 38 degrees east for a distance of 230 feet. These courses show that there is a considerable uniformity in the strike of this vein, when you treat it broadly throughout the whole, but as we approach the Osborne fault on all of these
867 levels there is a percepti- bending. Whether this bending is caused by the fault, or was there before, I do not know, but there is an unusual condition, an abnormal condition as regards the strike of the vein at that point. This is simply a local condition, and extends for a comparatively short distance south of the plane of the interception of the vein by that fault. The nature of the interception of the vein by the fault, I think, can be seen by the intersection of the blue plane better than it can be described. In the siligo tunnel, or apex tunnel, which I have not yet mentioned, we have raise No. 4 east connecting the lower Stewart tunnel with the siligo tunnel upon the Stewart vein. There is a fault shown, following substantially the course of that vein in the siligo tunnel. At its southerly end, there is another fault, dipping at about 30 degrees, similar to that of the Clancy fault, and it probably is the Clancy fault. In addition, at the easterly end of this, the Osborn fault cuts across, so that we have the condition in that level of the meeting of the zone between the Osborne fault and the Clancy fault, and I think a third fault, corresponding in direction with the wall of the vein, so that the country is very much crushed and broken. But
868 extending from this point, which is near the surface of the ground, downward to the Fir tunnel, we have, as shown by the dipping blue sheet the under surface of the Osborne fault. The plane of the Stewart vein is as shown by a plane if it were laid over the red workings. In every case, the blue sheet, the Osborne fault, is reached by the drifts running out upon the Stewart vein. If the

country down to the Clancy fault were eroded, we would have a substantially level line as represented by this pointer from the Siligo tunnel to the south. If the country under the Osborne fault were eroded—we cannot say above the Osborne fault, as we did in the case of the Clancy fault, because that would necessarily mean the removal of the entire vein—but if the country to the northeast, which is under the Osborne fault, were eroded, we would have the appearance shown by that blue sheet. If we followed the apex of the vein beneath the Clancy fault we would walk northeasterly on a comparatively level line. When we reached the Siligo tunnel we would step off into space. The only practical way of working the mine—which has been called the apex from there down—by the miner, would be by getting at its apex above and sinking a shaft, and then driving a drift out until he reached the Osborne fault, and then he would have a splendid place for a dump.

869 There is one thing I would like to speak of as regards the thickness of this vein and its intersection with the fault. The stopes are in many places quite wide, eight and ten sets, five feet to the set. This does not by any means mean that the vein, if it is ten sets wide, is of a width of fifty feet, because it is a flat vein, it is variable in its dip, and sometimes the vein lies locally quite flat, so that you can have a vein only a few feet in width, and yet developed indefinitely on a horizontal plane by the stopes. The solid ore, the galena, does not by any means represent the full width of the vein in my opinion. It is often scattered through the quartzite adjacent to this ore, but in no place have I seen anything approximating a width of 80 feet or 50 feet at right angles to the plane of the vein. The width of the vein as it approaches the fault makes a tremenduous difference in determining the highest point of the vein; if it is a comparatively narrow vein, the top of that will be very much lower than the top if it is twice as wide, because it is approaching the plane which cuts steeply across the plane of the vein. To illustrate that point as to the width of the vein and the dip of the vein, I would like to take that photograph of Mr.

870 Frank's in the lower Stewart tunnel, Plaintiff's Exhibit 16. This shows splendidly the fault on the right and the vein on the left. The line of contact between the two is, of course, the dip of the fault, not the dip of the vein, and it was not presented as showing the dip of the vein. The dip of the vein, however, was, as I remember it, said to be illustrated by the dark line extending through the photograph. Now, this is necessarily a view looking toward and into the vein as cut off by the fault, because it was taken in the drift itself, as described. Now, at a point just 17 feet west of the point at which this photograph was taken, there has been a crosscut eight feet long run across this identical body of ore, so that you can get a view just like a cross section, instead of looking at the end of the ore, you get a view of the side of this same ore as it dips down into the earth. The conditions at that point, just 17 feet away, are as shown——

Mr. FOLSOM: I would like to have this paper marked for identification.

Little cross section produced by Mr. Wiley marked Defendant's Exhibit "K" for identification.

Q. Just point that out on the map?

871 A. It is a point on the lower Stewart tunnel near a point marked "L 5362." I will give its location more exactly, by referring to the point which is marked on the Defendant's map. It is taken at a point 12 feet west of station 2512. That station is not on our map, but is on Plaintiff's Exhibit No. 1.

Q. Who made that cross section?

A. That is a sketch which I made myself on the ground, and—it is a rough sketch, but it shows on a scale of one inch equals one foot the side of this crosscut, the same body of ore as shown in the photograph, except that instead of the view of the end of the ore corresponding to the portion on the left of this sketch, it is an exact cross section of the side of the ore, just as if the crosscut had been run in where this photograph was taken and a view taken from the side. It shows this very distinct body of ore; it is very black and has much galena in it, and is clearly and sharply distinquished from the brown and white country quartzite above and below. The galena is from three to four feet in thickness, and is shown downward upon its dip for a length of 8 feet. The greatest dip at any point is 19 degrees on the under side, the average dip as it

872 approaches the fault is 10 degrees. Is that place now accessible?

A. It is, yes, or it was accessible yesterday.

Q. Does it still show the same condition as disclosed in the photograph and this sketch?

A. It shows the same condition as disclosed in the sketch. The condition disclosed in the photograph is not the same in the ground now, as there has been considerable digging at this point.

Q. Mr. Wiley, is the edge of the vein, the terminal edge of the vein against the Osborne fault in your opinion the apex of the Ontario ore body?

A. It is the edge, not only the edge, but the under edge, the downward termination, as well as the termination upon the strike of the Stewart vein. The apex of the Stewart vein lies to the south and above the Osborn fault.

Q. What is the course of the edge of the vein as distinguished from the course of the Osborne fault, the edge of the vein against the Osborne fault?

A. The course of the Osborne fault on the level is approximately north 85 degrees west, that being shown by the blue plane. The course of the edge of the vein, the terminal edge against the

873 fault, corresponding to the red line marked apex upon Plaintiff's Exhibit No. 3, I believe, is north 41 degrees west.

Q. What is the course of the lower Stewart tunnel or of the terminal end of the vein against the Clancy fault above the lower Stewart tunnel?

A. The course of the lower Stewart tunnel is north 30 east, and the course of the terminal edge under the Clancy fault is about the same.

Q. Is there any bend in the vein in the Siligo tunnel or on that level?

A. There is something of a bend in the vein, but as I said, that is in the area lying between the Clancy fault and the Osborne fault, and it has been very much broken and disturbed throughout that section.

Mr. FOLSOM: You may examine.

Whereupon further hearing was adjourned until 1:30 P. M. of this day, Monday, January 13th, 1913.

874 JANUARY 13, 1913—1.30 p. m.

WALTER H. WILEY, resumed the stand for further

Direct examination.

By Mr. FOLSOM:

Q. Mr. Wiley, was that model prepared under your direction?

A. It was made at my suggestion.

Q. You know it to be correct as explained?

A. It is a correct representation of the workings shown on the plan map.

Mr. FOLSOM: I offer the model in evidence.

The COURT: It will be admitted.

Mr. DINES: We wish to make an objection, that Mr. Wiley has already stated that a part of the information from which it was made came from other sources and from other information, and I would like to ask him some questions about the model before it is admitted.

The COURT: I will withdraw my ruling, and you may ask him some questions about it if you desire.

Cross-examination.

By Mr. DINES:

875 Q. Mr. Wiley, in the course of your examination, with reference to the model which has been marked for identification Defendant's Exhibit "L," offered in evidence, concerning which you have testified, you stated that if a miner would come out to these portions of the Stewart vein that are on the Osborne fault, and assuming that all of the mass of the mountain beneath the fault were moved away, he would have a good plance to dump, did I understand you correctly?

A. You did.

Q. That is correct, is it?

A. I think it is.

Q. I think you have examined the Sierra Nevada claim, haven't you?

A. Casually, sometime ago.

Q. It overlaps the Ontario a certain portion of it, its lines, doesn't it?

A. I haven't clearly in mind the location of the lines, but it is in that vicinity?

Q. It is in this vicinity?

A. Yes.

876 Q. In the case of the Sierra Nevada they have an outcrop of the vein there on the east side of the gulch, have they not?

Mr. GRAY: I think I will object to that. I don't believe that they ought to go into these other claims and take up all of these phenomena in the Wardner district?

The COURT: I shall overrule the objection. It is a claim continuous, I understand.

Mr. FOLSOM: It does not overlap, as a matter of fact, but it is near there.

The COURT: In view of the evidence I shall allow a pretty wide range of cross examination.

Mr. DINES: I didn't desire to interrupt the witness when he was making those statements because I did not want to interrupt the course of his discourse.

The COURT: He may answer.

A. They have an outcrop for a distance on the hillside, yes.

Q. And the miners in the ordinary course of operating the mine, running their cars right along the gulch, have a good dumping place, haven't they?

A. Yes.

Q. Right down in the gulch?

877 A. Yes.

Q. You don't think that interfered with the fact that the Sierra Nevada had an apex, do you?

A. I don't know as to that.

Q. You don't think the fact that, if the hypothetical supposition that this cut-off took place, that if some one went to the trouble to take all the mass of mountain off from under the Osborne fault, so that the conditions that you represented in that portion of your answer should be true, that that would detract from our having an apex in the Senator Stewart Fraction if we otherwise had one, do you?

A. That was merely an illustration to explain the actual conditions as they exist now.

Q. It did not enter into your opinion on that?

A. Yes, it necessarily had some effect in forming my opinion.

Q. You offered that suggestion in connection with your testimony in the nature of a rather cordial New Year's greeting to us, than as a matter upon which you base your opinion as a scientific man, did you not?

A. No, I stated first, that if the country above the Clancy fault were eroded you would have certain conditions, and then

878 carry the analysis further and supposed that the country under the Osborne fault were eroded, and you would have

entirely a different condition. In one case you would have the top of the vein outcropping on a straight line; in the other you would have the undercut bottom edge of the vein coming out in an overhanging cliff.

Q. So that far — that matter of having a good place to dump did enter into and form part of your opinion as an expert witness and a witness in this case, isn't that correct?

A. I merely used that illustration in order to make it plain, the same as I said that a person going along the level would step into space. If it is an overhanging fault, as it is.

Q. I understand that part of it, but I want to know if it entered into and formed a part of your scientific opinion?

A. I think it is a homely way of expressing the fact that it would be coming out under an overhanging cliff.

Q. Now, you have represented on this model the stopes of the Ontario; you have not presented the stopes of the Stewart Fraction, have you?

879 A. That is true. I stated the reason, that we had the data complete in the case of the Ontario stopes, and that the Stewart stopes were largely inaccessible, and the data for constructing them is lacking.

Q. But you had access to these workings or you have surveys upon which exhibit "C" was made, did you not?

A. Yes, and these workings are all shown upon this model. Of course the plaintiff could have built a model including their stopes, and made it complete. We could not.

Q. You could have taken them from our stope map, could you not?

A. Not from the stope maps that you have presented.

Q. Then the reason for the omission of the stope of the Senator Stewart Fraction from the model known as defendants' "L" is—by reason of their omission is true that this model would present to a person first looking at it some evidence of the dip and strike of your Ontario ore bodies and little evidence of the dip and strike of our Senator Stewart Fraction ore bodies, is that not true?

A. That is not true. May I explain the reason.

Q. In one moment; I have another question first. Is it

880 not true that the stopes of the Senator Stewart Fraction, if filled in here between the levels as shown on this model and between the different upraises as they actually exist in the ground, would give a clearer idea of the dip and strike of the Senator Stewart Fraction vein than as presented upon the model, without reference to the reasons?

A. That is partly true and partly not true. I can explain in a few words why I qualify that.

Q. All right, go ahead.

A. The model would be much more complete and much more satisfactory, very much more so, and I wish very much that the stopes could have been put in; It would have shown the continuation between these red levels on the line of the dip, where now there is a void. As to the strike I think it would rather have obscured the

question of the strike, because in this case we have the levels standing out by themselves much plainer than if they were obscured by the stopes. That is the same on plaintiff's exhibit 2, which shows the stopes; the red covering is made as a separate map in order not to obscure the direction of the drifts upon plaintiff's exhibit 1.

881 Q. Now, you say that this model has been reduced to scale?

A. It is made on the scale of fifty feet to the inch, the same as the plan map.

Q. Were all the parts of it that have been referred to by you scaled?

A. They are all made on the same scale as the map, yes, sir.

Q. Were they sealed with reference to the part that represent- or purports to represent, so that they give you in connection with the model, the same relative size or length of dimensions as you would have if you would see the ground itself?

A. Yes, with this qualification: for instance, there is one, the Osborne fault is shown simply by this sheet of cellul*i*od which has a very material thickness, and this simply shows the upper claim against which the vein turns.

Q. Well, I will call your attention to this portion here you have called Vent. Is that reduced to scale?

A. I said that the vent was simply a box sticking out from a shaft or raise which has been made from below and which is

882 inaccessible. We have simply placed a small piece of copper fastened by this wire to indicate that place. Whether it is exactly the size of the box that was put there or not, to scale, I am not sure; I am inclined to think it is a little smaller than the actual box through which the air goes.

Q. That box that you referred to was seen by you personally?

A. Yes.

Q. What is the size of it as it is on the ground?

A. I saw it last fall; I think it is about a foot square as it sticks out, and it sticks up quite a number of feet.

Q. Down below did you see any workings that it connected with?

A. I saw three chutes down below; whether it connects with them or not I don't know of my own knowledge.

Q. Where did you see them?

A. In the upper Stewart tunnel.

Q. How far is the point of your observation in the upper Stewart tunnel from the vent; what distance?

A. The distance on the slope of the vein scales about 190 feet.

883 Q. Now, how far did you see these workings that you refer to above the upper Stewart tunnel?

A. They were on the tunnel and for a few feet above, two or three feet. They are caved above that.

Q. Then you don't mean to be understood as saying to his honor positively that those openings now are continuously connected with this vent?

A. From my own knowledge I certainly do not wish to be understood as saying that they connect.

Q. Was that vent, the part of it that you looked at vertical in the ground or on an incline?

A. As I remember it it was on some incline.

Q. You were also asked about the strike and dip of the ore bodies represented on this model, and I understood you to give a number of instances where you had taken the strike for certain distances, and you took an average; Is it your statement to the court that that average represents the course of this vein, the direction of the course of this vein throughout its entire extent?

A. It represents the average course of the vein throughout its entier extent and for the distances given specifically on each level.

884 Q. You take the Mississippi river, which is over three thousand miles in length, as it goes from Itaska Lake down to the gulf. Between Minneapolis and St. Paul it is a matter of common information and knowledge that there is a ten mile course of that river east and west, and above that as it comes down from Lake Itaska there is much more than ten miles, more than fifty miles east and west. You would not think that a general course that you would obtain by way of an average, would give you an exact description of that portion of the river between Minneapolis and St. Paul where it is east and west, do you?

A. Certainly not; it would not give the direction where that unusual direction in the river occurred.

Q. Now, in this case, the Stewart vein, you say, is a fissure vein, but the deposition of ores has been largely by replacement. Do I quote you correctly?

A. Yes, the original fissure has been much enlarged by a replacement of the adjoining rock.

Q. Now, where ores are deposited by replacement in a replacement vein, you find greater irregularities of dip and on strike, than you have in the ordinary and true fissure vein, do you not?

885 A. You are likely to have, yes.

Q. And there is a good cause for that, is there not; is it not because the solutions as they eat out and take into solution the rock with which they come in contact, are necessarily or to some extent limited and controlled both by the solubility of the material which they attack and by its imperviousness to the liquid, is that right?

A. That is the right, with the added explanation that in this case, where the rocks are quartzite and not limestone, and more homogeneous in their nature than the average limestone, that I think the changes in the vein are due more to differences in the original fissuring than to a difference in the solubility of the enclosing walls.

Q. In any event, you find these extreme irregularities both as to dip and strike, of this vein when you compare different portions of it, do you not?

A. When you compare different local portions, yes.

Q. I will ask you, if you please, on plaintiff's exhibit No. 1, Mr. Wiley, drawing a line from the point on exhibit 1 where the vein crosses the southerly side line of the Senator Stewart Fraction and

the point on the same exhibit where it crosses the easterly
886 end line, give me the course of that line, if you will kindly do that?

A. The point where the vein crosses the southerly side line at what elevation?

Q. At the highest elevation that it is known to cross there in the workings that we have?

A. You mean to take the point at the top of raise No. 2 west under the Clancy fault? That, in my opinion, is not the highest elevation. I would take a point up there——

Q. Well, I will assume the point so that I will relieve you of the responsibility of selecting that point. From the point "W" to the point where the vein crosses the easterly end line of the Stewart Fraction, please give me the course of that line.

A. From the point where the vein crosses the easterly end line of the Senator Stewart fraction on the 300 or 400 foot level, or where?

Q. On the 300 foot level.

A. That is, from the point on the end line where the footwall side of the 300 foot level intersects the east end line to the point "W" at the head of the Clancy raise is nearly east and west,
887 about north 85 west, as you can see by the blue lines which indicate east and west. Have you known of that method being taken to determine, not scientifically, but generally, the course of a vein in litigation over vein rights?

A. No, I never heard of that.

Q. Have you read the Horseshoe case decided by the Supreme Court of the United States?

A. I don't know. I have heard something about it.

Q. Do you know about the Horseshoe case?

A. I have heard of it. That was in Leadville, wasn't it?

Q. Yes.

A. I have heard of it.

Q. Have you read the Delmonte case, decided by the Supreme Court of the United States?

A. I think I have, but some time ago.

Q. Do you not know that in that case the court passed that kind of a line in determining the general course of irregular veins?

A. No, I am afraid you are doing the court an injustice, I don't know——

Q. Well, I would like to show it to you.

888 A. Well, I would like to explain, that in taking my courses I take points on practically the same elevation.

Q. You do admit that even the general course as found by your average, or the average course determined by your average, would depart to a considerable extent from the course of portions of the vein that could be selected?

A. That is true.

Q. What is the course on your exhibit, or on your plan map if it is more convenient for you, on the 300 foot level in the Senator Stewart Fraction?

A. I have previously taken these courses from the map, and I find in the 300 foot level a course of north 34 east for a distance of eight hundred feet.

Q. That is as the level runs in the ground?

A. The 300 level is colored in brown.

Q. That is the one you just gave?

A. Yes.

Q. That is taken from what point; where do you get your eight hundred feet?

A. Taken for a distance of eight hundred feet from the southerly end of the vein to the northerly end of the vein.

889 Q. In that you took into consideration the ore bodies that are -alled the Gray and the May in the Ontario, that portion of the level that is shown there, did you, in its winding course?

A. This portion of the level marked drift 313 west, that is the portion. We know that is a cros-cut; also there is a cros-cut on the northern end of drift 313 west, but that was not taken into consideration.

Q. Then you began at that point where you hold your pointer, at the end of the crosscut on the 300?

A. The vein is straighter than the working, that is all; the vein goes through from the end of this 313 west drift, and goes through straighter than the working, which runs nearly square across as a crosscut.

Q. Now, if we compare that course with the course that is shown on the 200 foot level, we will see that the portion of the 200 foot level between raise 211 I think it is, and the point where the ore is last shown in that level, you would find that an entirely different course, would you not?

A. You would.

890 Q. What would be the course of the vein in the section that I have designated?

A. That would be very much easterly and westerly.

Q. I would like to have that as near as you can give it, if you please, Mr. Wiley?

A. That would be about seventy-nine east as scaled on the map.

Q. Now, I will ask you to take it from the foot of raise 218 east to the breast and give me that course?

A. That is a course I should explain, that you are not taking the course of the vein; you are taking the course of the fault. Do you wish that?

Q. Yes.

A. Well, about south 85 east.

Q. Is the vein up against the fault there all the way?

A. No.

Q. How much of it is exposed?

A. The vein is shown at the end of raise 218 east; that is the termination in an easterly direction, but the balance of the drift follows simply the fault.

891 Q. Is this working here on Exhibit 1, where there is an indication of white on the 200 level, that seems to make a loop; is that on the vein?

A. I presume so; I have never been in that portion of that drift; that is caved.

Q. You think it is in the vein, do you?

A. I presume it is.

Q. Isn't it true, that, following that portion of the vein that comes from the foot of raise 218 you would have a vein away from the fault, running with a course almost due east and west?

A. Well, that would not be the course of the vein properly; if this is a wide vein between the two, the course would be as shown by the longer drift.

Q. The upper one is the longer drift?

A. I have never seen what is in there, and I don't know. I surmise that it is probably the fault.

Q. What do you find as to the course of the vein immediately under the old lower Stewart tunnel level and near raise 218 east, the portion of it away from the fault?

A. I have never seen that drift on the 100 foot level, that is inaccessible. On the tunnel level itself I see the vein very clearly.

892 Q. On the tunnel level itself, what is your course of the vein there from the shaft extending on in an easterly direction as far as you can trace the vein?

A. North sixty-five east is the course of that portion.

Q. Very different from the course that your average indicated, isn't it?

A. Entirely different from the course of the vein, if you consider it in its entirety, extending down to a point covering the ore bodies in the Ontario claim.

Q. Will you give me the distance, if you please, of the last course that you named on the tunnel level and on the 200 foot level, between the points that are already identified in the former questions?

A. On the 200 foot level the distance scales 290 feet; on the tunnel level the distance scales 300 feet—no, excuse me; I am away off. I have got the wrong scale. I am used to working on our map, which is a fifty scale, and that is on another scale.

Q. Yes, this is thirty feet to the inch.

893 A. Well, let me change those answers if you please. On the 200 foot level the distance as scaled on the plaintiff's map, which is on a scale of thirty feet to the inch, is 170 feet. On the tunnel level the distance over which the strike was taken is 180 feet.

Q. Mr. Wiley, your model was based on what information as to the vein in those portions that you did not visit yourself?

A. It is based very largely upon the testimony of the plaintiff in this case.

Q. Well, how do you select that testimony, from reading it over out of the stenographer's notes?

A. No.

Q. From notes of your own?

A. Yes.

Q. Well, who stated it to you?

A. As we heard it here. I do not mean to say that the plaintiff

stated what was in each particular working, but where he showed on his stope map, for instance, a continuous stope, I assume that there is a vein through those stopes.

Q. And on what information did you leave that vein out in portions where our witnesses testify that it is, and where we say that it is and claim that it is?

A. In no case intentionally. We may have overlooked
894 some of the testimony. I have mentioned, for instance, one raise here that is gray, red only part way, and the strong probability is that that particular working is in the vein, but I don't know.

Q. So you colored that red, did you, in that instance?

A. I colored that red for a part of it, red around the top.

Q. Which raise do you refer to?

A. This one.

Q. By leaving the balance of that red, off, you do not mean to say to the court that there is no vein in that portion of it?

A. In that particular case, I have never seen it—I don't know, but I have an opinion, based upon the fact that I have seen the vein near there at a higher elevation.

Q. Then, if you had seen it at a higher elevation, why did you not color that rod in there if you pretend to make a fair model?

A. I have colored this adjacent raise red on the top where I actually saw ore.

Q. But one looking at this model would say that the
895 raise went out of the vein at the point where the red ended?

A. One looking at that model and noticing the red color above and the red color below would draw the inference that the vein extended, in connection with the testimony which I now give, that they extended from one to the other.

Q. In the first case why didn't you paint it red?

A. I think this raise is probably under it in the footwall.

Q. His honor has not had the opportunity to examine it that you have, and when you are trying to show him the conditions there, you say that he would naturally draw the inference on that raise—why didn't you aid him by putting it red like you did these other portions?

A. I endeavored to aid him in my testimony, describing that particular raise, and saying that I did not know, and I further endeavored to aid him by this cross section No. 5, which shows the vein continuing down through that section.

Q. Then you do not claim that the portions of this model, Exhibit 14, that are not shown in red in all instances, do not disclose *vine*, do you?

896 A. I see no other place to which that applies except raise No. 2 west, which I have described as going up 147 feet, and showing vein in the top, but in order to reach that I went through a very tightly timbered place, which is painted gray, to the point near the point where it becomes steeper; from there up it is painted red, and I do not mean to say that that is exactly the right amount of red, because I don't know.

Q. You don't mean to say that that raise No. 2 west on the model below the card indicating it not being done in red, that that did not have a vein in there, do you?

A. I mean to say this, that it was so tightly timbered that I could not determine over there.

Q. Answer my question now please.

(Question read.)

A. I mean to say that it does have a vein in it as described and as painted for a portion of the distance.

Q. That does not answer my question. I will ask another question.

The COURT: You do not let him answer that one.

Mr. DINES:

Q. If you will answer my question, then you can explain
897 afterwards. Do you mean the court to understand you, by presenting this model with the lower portion of raise No. 2 west colored in gray from the point it rises above the level, that that portion of the raise immediately adjacent to the level in its upward course does not disclose a vein?

The COURT: You can answer that question.

A. I can for a portion of the distance. As to this particular raise I can say that it was left that way because I heard Mr. Clancy in his testimony say that it did not reach the vein until this upper part, so it is colored there to agree with the testimony of Mr. Clancy.

Q. You heard Mr. Clancy say that yourself, did you?

A. I did. If he did not say that, then I misunderstood him.

Q. Now, you know that there is stoping all above this drift No. 4 west and drift No. 4 east, do you not?

A. I know it—I believe it from the evidence of your map only.

Q. Now, I call your attention to the fir tunnel level. You have the blue end indicating the fault in the portion I show you here. I will ask you if in fact that is not only on the vein, but if there
898 is not from six inches to one foot of good galena showing right at that point in the fir tunnel level?

A. That is correct as regards one portion of your question, and wrong as regards the other. It is not in my opinion upon the vein. It does have some excellent galena. Along the line of that fault, if I may explain, from this line downward over the edges of these ore bodies there has necessarily been a great deal of crushing of the ore as well as of the country rock, and we have the drag and that is a case where there is excellent ore along the plane of the fault and outside of the vein.

Q. How much ore did you see there?

A. There is in the face of that tunnel ten to twelve inches of very fair ore; I should judge it is, I did not assay it.

Q. Correcting myself, isn't there three feet of ore in that portion of the tunnel?

A. No.

Q. Any place in the vein?

A. Well, that depends on what is ore. There is a ten or twelve inch streak of excellent ore, and it is possible that the ma-
899 terial on either side of that might assay. How rich it must be to constitute ore I don't know.

Mr. DINES: I will ask the stenographer to mark this photograph for identification.

Photograph marked for identification Plaintiff's Exhibit No. 17.

Q. I will ask you if the photograph that I have had marked Plaintiff's Exhibit No. 17 is not a correct representation of the ore, the darker portion of it showing the ore and the lighter portion of it showing the cross material, at the very place shown on your model, colored in blue?

A. That is correct, with this explanation, that there are two different degrees of lightness, and fault material as shown in there, the ore being shown in the darker streaks from ten to twelve inches in thickness.

Q. Do you call that ore there, that dark streak?

A. I do.

Mr. DINES: We offer Exhibit No. 17 in evidence in connection with this cross examination.

Q. Do you call that ore there drag?

A. I do.

Q. Do you not know that what you call drag there is
900 not even within the fault material?

A. It is in this case within the fault and within the fault material.

Mr. FOLSOM: Mr. Gray thinks that this photograph is objectionable on the ground that it could only be introduced in rebuttal. It is incompetent under the rule in this state, and we object for that reason.

Mr. DINES: I understand the objection goes only to the order, that is all.

The COURT: Yes, it would be more in consonence with the ruling of our Supreme Court to keep it until your rebuttal.

Mr. DINES: I understand. I am not familiar with the rules in this state, but in Colorado we can introduce evidence during the cross examination, as part of it.

Mr. FOLSOM: Well, we will withdraw our objection.

The COURT: It may be admitted. I think it comes in very nicely, myself, with the cross examination.

Mr. FOLSOM: Personally I agree with your honor. Mr. Gray disagreed with me, and I bowed to his wishes, but we will waive our objection.

901 Said photograph admitted in evidence and marked Plaintiff's Exhibit No. 17.

A. May I explain this.

Mr. DINES:

Q. Yes.

A. This shows very nicely the breast of that drift, on the fir tunnel level, looking at the breast. The fault material is shown by the lighter colored material, and also in fact the entire width is all fault material, but in this fault following down along the dip is a streak of excellent ore in the darker outlines, of galena, shown fairly sharp on the upper side and more undulating on the lower edge. The material under that on the ground shown in the picture is entirely different from the ore above. This picture also shows one other point within the face of that drift, and that is that there are drill holes; there is one shown very distinctly, which were drilled in there with a machine drill, and have never been shot.

Q. The drill hole you speak of is in the fault material?

A. In the fault and in the ore.

Q. Now I will ask you that if that ore that I have called
902 your attention to in plaintiff's exhibit 17 is connected with the vein?

A. It is connected with the vein, yes.

Q. Is it a part of the vein?

A. It is not.

Q. You say, although it is connected with the vein that it is not a part of the vein? because you think it is drag?

A. It is drag on the fault plane, and not in the vein.

Q. Is it not true that a definition of drag is vein material that has been broken off by the fault movement, and necessarily lies in the fault material, in the gouge, and behind the line of movement?

A. It lies in the line of movement.

Q. But behind the moving body, does it not?

A. Behind the vein, but in the fault.

Q. Behind the moving body?

A. The line of movement is not a simple line; it has a material thickness.

Q. You mean by that the gouge?

A. The gouge, the broken quartzite, the ore that is carried in the fault also is all a part of the fault.

Q. Let me illustrate by two pencils, if you please; suppose
903 this is a vein or a section of a vein where a fault movement has caused these to separate in this way. Now I have moved one of the pencils downward along the fault line, and it is in the fault line that you would look for the drag, from this point up to the point where it broke from, wouldn't you?

A. If you had two pencils moving, yes, but if you had two masses of rock which had moved six thousand feet, you would expect to find that drag material at any point in the vicinity of the end of the vein, and maybe for long distances beyond.

Q. Isn't it a fact that you find in connection with the Osborne fault and with its fault movement little evidence of drag?

A. We find less evidence than I would expect in so great a fault.

Q. You have a fault movement in this case where the vertical displacement amounted to more than six thousand feet, didn't it?

A. I don't know.

Q. What is your best opinion on that subject?

A. I have no opinion, except that there has been an extensive movement. The Geological Survey says six thousand feet and I have no cause to doubt their assertion, although I don't know whether it is so or not.

904

Q. Was that movement a sudden movement or a movement possibly by inches and running over a long period of time?

A. Probably very slow.

Q. Covering many years, many hundreds of years?

A. Undoubtedly many millions of years.

Q. Then you would not expect, when you find a movement extending over so great an extent and covering such a great period of time, to find much evidence of drag, would you?

A. I don't think the time element cuts any figure in it; perhaps I should explain; that sounds like I was talking in a visionary way. When I say millions of years that is simply based on the fact that if we had a sudden drop of six thousand feet of one part of the mountain relative to the other, we would necessarily have a precipice; one part would be higher. There is nothing of the sort here, so I assume that it took as long for that fault to move down as it did for the natural agencies to erode the surface to an equal depth, so it took a very long time.

905

Q. If the movement was sudden, would not you also have had fusion, from the heat of the movement?

A. Well, there may have been some San Francisco earthquakes or something like that when it dropped. I don't know about that; I am not informed.

Q. And where—And a small vein like the Senator Stewart, compared to the great mass of earth involved in that movement, you would expect that in a movement of six thousand feet, *ot* leave hardly a pencil trace, wouldn't you?

A. No, on the contrary I would expect to find considerable, when such an enormous mass moved such a great distance, that this material would be found in the line of movement, not only downward but laterally.

Q. Isn't the quantity of that material deposited over such a great distance a question that you would necessarily look into before you reached a scientific conclusion on that subject?

A. I would not expect to find the trace of this material extending up in the air like the tail of a meteor six thousand feet; I would expect to find in certain places in there where the angular edges had rubbed off the ore much more than it has.

906

Q. I was not referring to that portion of it that must have been up in the air, left up above, but I am asking you this question; isn't it true—and I don't understand you to deny it—that there is very little evidence of drag connected with the Osborne fault?

A. There is evidence of drag, but not as much as I would expect. That is due partly to the fact, probably that the ore—when I speak of drag there I mean drag of ore—and it is due largely to the fact that the ore is very soft, and you often find on the ends of the fault

a black material, or the galena, has been so finely comminuted and divided that you cannot recognize the structure of the galena from which it was made at all.

Q. Now, is the explanation you have given as to drag the explanation that you give the court for not putting the same indication in red for this material on the fir tunnel level at this end to indicate that there is vein material there?

A. There is no vein material there, except as this drag here occurs in the fault.

Q. Well, it is there, isn't it?

A. It is there.

907 Q. I am not asking you what put it there or how it came there; I will relieve you of the responsibility of that. Does that level correctly represent, as seen in red, where there is vein material and ore?

A. It does.

Q. In all places?

A. It does.

Q. It does not in that place?

A. It does represent where there is vein?

Q. You have admitted that there is vein material and ore there; you say 12 inches and I say three feet as shown in that photograph, and you have given nothing to indicate it on that model. Do you think that your model, on which you have said that the vein material is shown to the court in red, will give to him a correct idea of the conditions, when you explain that you find it there but you did not put it on there because you classified it as drag ore instead of part of a vein?

A. It will because this is in the fault. That is not the only place where there is some ore in the fault.

Q. Well, I will show you some other portions that you have not painted in red; you do not seem to be able to find them. I will try and find one or two more.

908 A. I can show you some.

Q. Well, I understood you to tell his honor that you could only think of this. If you have another one that you wish to point out to him, you may?

A. I was speaking of the vein. Here is a working at the 200 foot level which I did not describe, and where there is a difference as to where the fault goes, and it is shown at the end of the 200 north crosscut. In that case there is considerable ore along that fault, and there may be some actual mineralization in that fault at that point.

Q. You said nothing about that in your examination in chief?

A. No, I did not mention that.

Q. Is the fact that you have the vein very clearly shown by the paint you have indicated on this model, that is, the 200 north crosscut and the drift, is that right?

A. That is correct.

Q. Now, there is a raise at that point, is there not?

A. There is a raise which is inaccessible except at its lowest portion.

Q. Do you know where that raise goes from that part of
909 the 200 north crosscut?

A. It goes right from the end of that crosscut, or just about.

Q. How far is that raise?

A. It goes up at least sixty-four feet; how much higher I do not know.

Q. Is it on the vein?

A. It is upon the fault itself. It is called the vein, and there is some mineralization there, which is away from the vein.

Q. You have never been up in it yourself?

A. No, not beyond that point.

Q. But you do say you do believe it is the vein, do you?

A. No, it is not the vein.

Q. Then you are not answering from your own information or from any actual observation that you made yourself as to that raise?

A. Yes, there is mineral in that raise, in that lower portion, I know that of my own knowledge.

Q. But you don't know how extensive it is?

A. I don't know how high it is.

910 Q. Is that the reason you left it off entirely from this model?

A. No. It evidently was not surveyed, and was not put on the model.

Q. There was no purpose in having your model show at that point absolute fault material all through, and in leaving out that portion?

A. It was not left out. The drift itself, which shows the direction, is on.

Q. But this upraise, 64 feet high, I understood you to say——

A. That is not on. That is an extremely difficult place to get at. I don't believe a man could get in there to survey it. I crawled through a very small hole to get there.

Q. Is it not true that what you call the fault at the portion concerning which I last interrogated you, I mean in reference to the raise running from the 200 north crosscut, that the fault that you referred to as existing there, was absolutely cut off by the Osborne fault and is shown in those workings to have been absolutely cut off by the Osborne fault?

911 A. No, it is certainly not cut off by the Osborne fault.

Q. How much investigation did you make to determine that fact?

A. I investigated that as thoroughly as the circumstances would permit; in fact I waded through three feet of water and got out into the crosscut which runs north of it for the purpose of seeing what was in there, and I examined it as thoroughly as possible as to the conditions there, and I decided that the fault in that drift was itself the Osborne fault.

Q. Is it not true that at the east end of the 202 drift, that is the drift which you refer to, there is plainly a cutting off of that fault by the Osborne fault?

A. No; on the contrary, there is plainly at that point a continua-

tion of the fault which is shown in that drift, on to the east in the side of the drift.

Q. Now, you made a cross section that you passed through what you term the vent, if I understood you correctly, and you laid your pointer as you now lay it, pointing from the vent to about through the upper portion of the stope of the Gray ore body. Did
912 you have any particular reason — selecting that particular place for a cross section?

A. Yes.

Q. What was your reason?

A. That there we had the highest disclosure of what is said to be the vein on the surface.

Q. What do you mean by the highest?

A. The vein at the surface, and we also had the Gray ore body beneath the Ontario claim.

Q. Isn't it a fact that a cross section a little bit more to the south and west would show you clearly that the dip of this assumed upper vein is entirely wrong and could not be correlated in any way with the vein below, as far as dip is concerned?

A. May I hold that?

Q. Yes.

A. I think the best answer to your question is simply to sight along the strike of the vein to the line of this assumed cross section. The raises above the lower Stewart tunnel level upon the vein align remarkably closely with that pointer, and it strikes me that that kind of section would have been even better than the one I
913 took, as far — it appears upon this model.

Q. Now, let us see—we will ask some questions about that in the Samuels raise. What did you find to be the dip of the vein there?

A. I explained in my direct testimony that my examination of the Samuels raise and the workings from it was very unsatisfactory, because they are almost entirely caved. The raise itself is a steep working, and down in the footwall; it certainly does not follow the vein, although it is closely timbered.

Q. Isn't it a fact that the vein shown in the Samuels raise has a dip of from sixty-five degrees to vertical?

A. I think it is a fact that the raise disclosed in the tunnel at the head of the Samuels raise goes down very much deeper, due to the presence of a small fault which I have mentioned.

Q. If you had passed the cross section through that portion of the vein which is shown in the dip of the Samuels raise, you would have had a very different condition from that which is shown in your cross section "J," wouldn't you?

A. If we had taken a cross section from the vent down in
914 any direction, we would have had a similar condition to that shown upon cross section 5. If we had taken a local dip and a short cross section at the south end of the upper Stewart tunnel, we would have had a different condition caused by this local fault.

Q. You have never seen any vein going up to that vent?

A. I have not.

Q. How many feet have you been from the vent in its nearest

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point, and by that—and by the vent I mean this metal slip on the wire on the model; how near have you been to that vent at the nearest point?

A. Not within 100 feet of it underground.

Q. Now, you are assuming the vein; you take the vein going through the vent, and assume that that is the vein. I assume that that is an unwarranted assumption; then you take a plane and pass it through the Samuels raise and going down on the lines that you would have to go to encounter the ore body in question, I will ask if you would not have a vein dipping and showing a very different dip from the arrangement that you have on Exhibit "J"?

A. I mean as I said before that a portion of the Samuels raise had a steeper dip, caused by a small fault. I would like to
915 explain, if I may, as to this matter of unwarranted assumption.

Q. Well, I mean that that is what we claim. I did not mean to use that term in any offensive sense, you understand, but that is our claim.

A. I understand first as to some of these workings, that they were put on from information received from Mr. J. M. Porter, who may be able to tell you something about them. The assumption that it continues up toward the vent, however, is not based alone upon the fact that there is an upraise there which is made from some point below on an incline, but it is based also upon the fact that in the upper Stewart tunnel we find a vein continuing upward in such a direction, that, if it continues on its course, it will come almost exactly to the point where we do find this ventilating box on the surface, so that I think I am fully justified in the assumption that it is extremely probable that that vent at the surface is the top of the vein which is seen in the tunnel below.

Q. You think then that the assumption is not unwarranted?

A. I think so.

916 Q. In making your assumption did you take all the physical evidence that was there in the ground that you could take, before you made it?

A. I did.

Q. Are you familiar with the shaft in the Qu-ker Fraction?

A. No.

Q. And the drift which runs from it?

A. No, I have not been in that shaft.

Q. Is it not true that at a known point closer to that vent than the point from which you have jumped there is a vein dipping to the northwest shown in a drift and shaft in the Quaker Fraction?

A. I haven't seen it.

Q. Did you try to see it; did you investigate it?

A. I made a hurried trip there. I have seen no such vein.

Q. Mr. Porter never told you about that when he was giving you information which you say you used in making this model?

A. No, I did not discuss that proposition with Mr. Porter.

917 Q. Now, just west of the section which we are discussing, your Exhibit "J," there was a winze, was there not, or at least a raise; it is a working from a level in here, from a drift on

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the vein at the point that I have shown—it is not shown on your model, a raise from that drift up to this little point that I show you on the model?

A. There is a little sub level just a few feet below this point, through which you pass from the Samuels raise to this drift, yes.

Q. Why didn't you show that on the model?

A. That is practically a continuation of this same point; it is just a few feet under there.

Q. It still shows the vein, does it not?

A. Yes.

Q. And shows where the vein is cut off by a fault, does it not?

A. No, I don't think the vein is cut off by a fault there.

Q. There is no fault in there?

A. Further to the south there is.

Q. What fault further to the south is it that cuts it off?

918 A. A cross fault which you call the Ontario fault, which does cut off the vein there.

Q. Is that the Ontario fault?

A. It is.

Q. You have not always been of that opinion, have you?

A. Yes.

Q. I think you called it a vein once in testifying about the Ontario?

A. Faults are often veins, and veins are often faults.

Q. Didn't you in the Ontario case differ from Mr. Winchell; Mr. Winchell said that was a fault and so classified it, and didn't you say it was a vein, and in that litigation in reference to the Ontario claim your contention was that it was a vein?

A. I called it both a fault and a vein. I don't remember exactly my testimony in that case, but it is a vein where it is mineralized.

Mr. FOLSOM: They were both on the same side in that case, Mr. Dines.

Mr. DINES: I understand that, but they were not both on
919 the same side on that question in the case.

Mr. FOLSOM: No, I think Mr. Winchell was unwilling to concede all that Mr. Wiley wanted to claim.

Q. Now, you called that a vein in the Ontario case, and you call it a fault in this case?

A. That might easily be, yes.

Q. Then it might be a vein at some portions, and a fault at others?

A. If a fault fissure is sufficiently mineralized to be extensively developed, as it was in the case of the Ontario near the surface, and ore found at numerous points although not in payable quantities, I would be willing to admit it was a vein which the miner would follow, hoping to find ore.

Q. It would take a good deal of drag ore in the breccia of a fault, to change it from a fault to a vein, would it not?

A. Well, you don't understand me, or something else. A fault

fissure is often a mineral vein, that is, there has been movement along the plane of the vein, which makes it also a fault.

Q. But in this case, in the Ontario case, you had some in-
920 clusions of ore, in the form of foreign material, as Mr. Winchell claimed, that had been put in there, not in the form of the deposition of ore by solutions which went up in the fissure, but as absolutely foreign matter put in there; do you say that that made it a vein or not?

A. Perhaps Mr. Winchell and I differed. We sometimes differ even when we are on the same side.

Q. Now, the Ontario fault you think, cuts off this vein at the point that you have indicated on the model, or at what portion from the point last under discussion?

A. Extending south.

Q. At that point?

A. Yes.

Q. That was the blue that you indicated by the blue on this little branch that goes out there?

A. That is marked by two blue lines crossing the drift in the direction I now hold my pointer.

Q. Did you take the strike and dip of the Ontario fault at that place?

A. It has a southeasterly direction and dips toward the southwest.

921 Q. Now, did you examine the winze, or if you prefer to call it a raise—I don't know which it is—it is either a winze running from this level at the top of the Samuels raise, or it is a raise coming from the intermediate level known as the 145, I believe, up to that?

A. No, I could not get in there except in the crosscut from the shaft.

Q. Then you cannot state of your own knowledge what that shows?

A. I cannot.

Q. And you cannot therefore say of your own knowledge Mr. Wiley, whether or not, before the ore reaches the bottom of that winze it is cut off?

A. I said that in my direct examination that it is extremely likely that within this space there are some faults with small displacements, simply reasoning by analogy that I found small faults all through the Stewart mine.

Q. Did you examine the crosscut—there is a crosscut at that point also, which I believe is not shown on your model?

A. Where?

Q. Is there not a crosscut—is this crosscut a little lower in the plan?

922 A. There is a crosscut down here extending out from the Samuels raise, a drift extending south from that, and a branch from the end. I have never been in it.

Q. Is this a crosscut indicated here?

A. That is a crosscut which is put on there from your map.

Q. And you don't know what that shows?

A. I do not. It was said to follow the Clancy fault; that is why it was especially put on there, to show the Clancy fault.

Q. Now, in your cross section, what is the difference from the point where you saw the vein disclosed, the vent, measured on the incline?

A. About 120 feet.

Q. Then you have there 120 feet of projection?

A. There is more than that from the point where we had the vein.

Q. You mean from the point where you saw the vein?

A. From the point where I saw the vein to the surface is about 200 feet.

Q. Now, there is a little working shown in the upper portion of this and right underlying the vein with some dotted lines. Was that working in your section?

923 A. That is the working shown also upon the model, and which I said would be explained by Mr. Porter. It is not upon the immediate plane of the section, and is shown on the cross section in dotted lines.

Q. At the point where those dotted lines are shown going into the vein here, was that a projection of the vein, that is the showing at the east of the vein over here is it projected to that point for the purpose of determining the position of the vein in any way?

A. No, only in this, that the vein is seen in the tunnel with its dip, it is continued upward from there, and at the point where it intersects this raise or vent it is substantially in a straight line.

Q. You have already explained that in taking your assumed dip indicated by your broken red line down to the blue on Exhibit A, that you have taken a dip of about 40 degrees?

A. I have, and I so marked it on the section.

Q. You did not, in taking that assumed dip, take into consideration the dip of the vein as shown in the Samuels raise and the workings immediately in connection where it runs from 65 degrees to vertical?

924 A. Certainly not, where it is along the fault and away to the south of this section.

Q. But that was a known portion of the vein covering the section that is shown by your section?

A. By no means.

Q. A projection, was it not?

A. By no means covering that section.

Q. How far is it from it?

A. The section in the model covered by this cross section five is as shown by my pencil, near the north bend of the drift on the upper Stewart level. The Samuels raise is shown upon this model about 200 feet south of this line.

Q. Well, you have a projection from this point where you saw the vein to the vent of 200 feet, so it would not be out of the way to project the other way, where you had known vein opened up?

A. That is entirely a different proposition. This was not a projection of the vein, but simply an assumption of the continuation of the vein in the direction in which I saw it going.

Q. Well, you do identify the fault given here as the Clancy fault on Section J?

925 A. I do not identify it as the Clancy fault of my own knowledge, but I assume that the statements of the plaintiffs in the case as to the continuation of the Clancy fault are so.

Q. And that is all that you made up your opinion from, is it?

A. In connection with the fact that I have seen the Clancy fault at two points, or I have seen faults which may be the same and which probably are what has been called the Clancy fault.

Q. But you cannot positively identify them as the same?

A. No, by no means.

Q. Neither can you positively identify the vein that you assume to be up under the vein with the vein down beneath the Clancy fault?

A. Oh, that is a different proposition.

Q. I am not asking you that; I am asking you if you can identify it?

A. Yes, much more nearly. Now, may I explain that?

Q. Yes.

A. We have one vein, and we have many faults. We find a fault here and we go a few feet and we find another one. But

926 where you have only one vein and you find two sections, it is a natural assumption, if they are pretty near in line, that they are the same.

Q. But you stated that if the top of the vein as shown in the Samuels raise is taken at from 65 degrees to vertical, you would have an impossible identification, would you not; upon that at least you would not commit yourself to an opinion as to their being the same vein, would you?

A. The vein in the Samuels raise may be the same vein, that is, it may have been the same vein at one time, and it has been dislocated by the fault; just as I am willing to say that I believe that the Gray stope and the Frank stope were at one time portions of the same vein although today they are widely separated.

Q. Now, the north end of the drift is not shown in your model running northerly from the Samuels raise?

A. Whereabouts?

Q. 179 feet. About the old lower Stewart?

A. I don't know personally as to that, except that there — a crosscut down here and two drifts extending from that crosscut. They are inaccessible, and I know nothing of them. The same

927 work which is shown upon the map is shown upon the model.

Q. Yes, but you heard the testimony about them did you not, the plaintiff's testimony, the same as you heard other parts of the plaintiff's testimony that you have introduced into your model?

A. I don't recall the details of it if I did.

Q. Well, you concede that any disclosures that were made in that drift running northerly from the Samuels raise, 179 feet above the old lower Stewart tunnel was not taken into consideration by you in making your model, is that right?

A. In making the model, there may have been a drift left off.

Q. I will grant that, but I am not asking you that. It is apparent that the drift is not there, but I am asking you if the information that that drift disclosed to the one who examined it, was taken into consideration by you in making your model or arriving at your conclusions?

A. No, because I don't know what is in there; but I do mean to say that it is entirely south of this line, and that that mass of ore through the Samuels workings was in places carried down by a subsidiary fault, and a fault not affectin- the vein further
928 north.

Q. A great many things may happen?

A. A great many things have happened?

Q. Yes, and one of the things is that there was a vein in there in the very point that you have left off of your model, which I will tell you, from information that I have received—because I am like you, I have not examined it—has a dip of 70 degrees to the southeast and 12 inches of galena ore in it, showing there, stoped from there. Did you have that information?

A. I did not; but even then, that occur-ence could not be indefinitely carried on the strike of the vein and assumed that that is going to break the continuity of the vein throughout. If so, then the break in the continuity of the vein between these ore bodies must have been continuous. The distance in this case, even if there is ore in those lower workings, and even if that is a faulted section of the ore above—the distance to which the assumption of a break can be carried is necessarily limited, as proved by the developments in this line in the fault deeper down, the No. 11 fault and this other.

Q. Now, your counsel, Mr. Gray, questioned our right of
929 projection, and called it a projection of 180 feet, where it was 180 feet between two known points. You have projected much more than 180 feet on your cross section between unknown points, have you not?

A. I have not projected; I have assumed a continuation of the vein between known points, just as I have assumed a continuation going down between known points; in other words, I did not pass continuously on that line of section *od* the vein.

Q. But you had two known points below to guide you in your projection, and you did not have two known points above?

A. Well, I had three points that someone knows about.

Q. Not in the same plane of section, are they?

A. Yes, substantially so; closely.

Q. Now, did you know the dip of the fault that cuts off the vein in that level immediately below the Samuels workings that you have shown here?

A. No, I have never seen it, and necessarily I do not know.

(Recess.)

Q. Mr. Wiley, I think it is fair to you to say that in Plain-
930 tiff's Exhibit No. 17 I think I myself misled you by a question, and I wish to call your attention to that Exhibit, and to say to you that the picture was turned upside down, and that the

drill hole that you referred to and which I thought was in the fault material, is not in the fault material?

A. I would like to say to you in reply that I do not believe you were mistaken, nor was I.

Q. I assumed that I was wrong?

A. I have a mental picture of the point where this photograph was taken as it stands in the ground.

Q. I thought that I had led you into error by that, and I wanted to correct it.

A. I think your informant is mistaken. It is a case where you did not know which is the top and which the bottom. Personally I will say that the way you showed it to me and the way I used it is correct as the thing stands in the ground. However, if you wish to turn it upside down, you have the condition which should exist in the ground, but which, strange to say, does not; that is, you would have, if you turned your picture upside down, your ore body lying on the hanging side of the fault, and it is not that way
931 in the ground.

Q. Well, I will prove later that it is that way in the ground. I am satisfied that I was wrong, but if you wish to persist, I will be relieved of the responsibility for having trapped you into an error.

A. Well, I would like to call the court's attention to the fact, that this picture, for instance, shows a foot rule hanging like Mahomet's coffin in the ground, and there is the pick with the head on the ground, and I am sure I am not mistaken, because I happen to know that the fault material in that case is above the ore, which is a pretty good proof that what I say is right.

Q. Well, we will have the person who took the picture later on. I wish to give you the opportunity to correct it, to be fair with you?

A. Thank you.

Q. The parties who identified it say that the fault material is not disclosed in that picture at all, that it is the wall material of the vein, and the vein. If you desire to say anything else, you may?

A. I simply wish to say that the fault material was disclosed in that drift, very finely broken and brecciated. Perhaps I
932 should in that connection—it may make it fairer if I call attention to these workings which have not been mentioned, which I omitted to mention, that there are two raises above this fault, one going up a height of 55 feet, and another some twenty feet, with a little drift at the top, and that they are entirely in the fault material, this very drift, proving that the material in the raises and in the drift is fault material and is the same.

Q. Now, Mr. Wiley, I will call your attention to the plan map, Defendant's Exhibit D, and I *ap*point out to you the workings concerning which I have been interrogating you from the Samuels raise. I will ask you if it — not true if the raise concerning which I asked you is still open, and that the connection is shown, and that the upper portion of it—I cannot see it without the glass, but I will ask you if it is not true that you can go down the winze, and you are connected in this level, these two points here, point L 5442 and L 5441, that those points are at least 20 feet apart and that you can

go up there, that that is all open, and the raise and this drift marked on here as the east drift, is all open now, with no caves in it beyond the point that I say connects in here, and that you can still
933 get to every *every* part of it, and to every raise from it at the present time?

A. That is perfectly true.

Q. That is correct, is it?

A. Perfectly true.

Q. Then you did not mean to be understood as telling the court that you had no opportunity to examine this drift known as the east drift from the Samuels raise?

A. On the contrary, if the court so understood me I wish distinctly to explain that I meant to say that the portion of the work that I could not examine is that between the Samuels raise—and when I used the term Samuels raise and Samuels workings, I did not mean to include the upper Stewart tunnel level.

Q. The upper Stewart tunnel level is a crosscut tunnel?

A. It is, with drifts extending from it. It is in a peculiar shape; it runs as a crosscut, and then runs back as a drift, doubling back partly in its own direction.

Q. Then you have no vein shown in the Stewart tunnel, unless you call this a vein in the little upraise that you have marked on your plan map?

934 A. That is correct.

Q. Is that a vein in there?

A. No, that is not a vein. That is a little crosscut in there.

Q. Between point L5432 and 5433?

A. Yes. This is a crosscut run through the vein, and there is no development on it. Then they wind clear around and caught it and came back. They could have done their work in a much shorter way.

Q. Now, the vent that you refer to, is shown on the map here immediately above the upper Stewart tunnel level, and designated 3190; just above 3190, marked "Vent". It is marked vent, elevation 3190.

Q. That is the elevation of the vent, is it?

A. It is.

Q. Now, you have elevation 3203 immediately adjoining that; what elevation is that?

A. I presume it is that Quaker Tunnel Crosscut.

Q. Now, the Quaker shaft to which I call your attention, is shown on this exhibit?

A. Yes.

Q. And the drift running from that is shown on it?

935 A. Yes.

Q. Out toward the vent?

A. Yes.

Q. Do you know whether or not that drift is on a vein?

A. No. I went down there hurriedly; I did not see a vein; it was late and I was very hurried, and I would want to see that again before being absolutely certain what there is in there.

Q. Are you willing to say it is not a vein at the present time?
A. My impression is that it is not a vein, but it may be; that there is vein material in there in some places.
Q. Do you know whether that drift is any more than 30 feet long?
A. I don't recall its length. I have not seen it since last fall.
Q. Is it not true that the vein is cut in the shaft at a point on the side of the shaft, and it is shown in the drift all along, and is in that 30 feet of distance, unless it has been driven further by you since, of about 30 feet in to the face, and that the vein is showing?

936 A. There is a great deal of surface debris in there, and in the hurried examination I made I would not want to say just as to what is shown in those workings.

Q. That drift is running toward—not directly toward but in somewhat of a curve toward the vent, is it not?
A. Generally in that direction.
Q. Do you know the depth of the shaft?
A. No; it is 30 feet or something like that.
Q. Do you recall the 85 foot level in the Samuels raise?
A. I said I had been in the crosscut, but not in that drift.
Q. Then you don't know whether there is any fault gouge shown in that point or not, or any vein?
A. No.
Q. Is there any fault gouge below that point on the lower tunnel level?
A. Below the Samuels workings on the lower tunnel level, immediately below?
Q. Yes?
A. I don't recall any. There are faults at numerous points in the lower tunnel level in that vicinity.

937 Q. In the 145 foot level was there any stoping done from that level?

A. I don't know.
Q. Above it?
A. I don't know.
Q. Do you know whether or not there was stoping underneath the fault, and whether or not the fault at that point forms the hanging wall of the vein?
A. I don't know the conditions as they existed there at the time the work was done.
Q. Now in drift 415 in your model you have shown a portion of that drift in red, then you have a fault out to one side here in the Ontario workings, or a blue mark which I suppose you intend for a fault?
A. Wait a minute; there is one thing that I omitted. There is a place here where it is painted black, that is, the same color as the standards. These drifts do not connect, and for the purpose of holding these two together, the man who made the model left that connection through there, and then painted it black, showing that that is just a standard, and is not intended to represent anything.

938 Q. The black part of drift No. 415 does not represent anything?

A. It is simply a support, the same as the black of the standard.

Q. You have red showing in Drift No. 415 west, but you have no ore showing along the sill floor or no vein material showing?

A. No, the vein is shown continuing, and is connected from this point through continuous stopes with the 300 foot level above.

Q. Then you do not mean to say that these points on this level where it is colored gray—that there is not a continuous vein between them, do you?

A. Yes, I do.

Q. You mean there is not a vein there?

A. Yes. The vein lies over.

Q. Is there a vein over it continuous?

A. Yes, and stopes on that vein, absolutely demonstrating the continuity of the vein from the 300 down to the 400.

Q. Isn't it a fact that on that sill floor there is ore all along these points that you have failed to color with red?

A. There is some low grade ore in places there under the footwall of the quartzite.

939 Q. It is vein, isn't it?

A. No.

Q. It is not vein?

A. No.

Q. It is just ore?

A. It is very low grade, I should judge, from the appearances. I took one sample low.

Q. It is not quartzite, is it?

A. Yes.

Q. Altogether?

A. It is quartzite which is mineralized by lying immediately under this large ore body.

Q. Wasn't it as well mineralized as the Ontario fault?

A. Well, the Ontario fault in places had some solid galena.

Q. Now, wasn't this part in here that you have failed to color red as well mineralized as that Ontario fault?

A. No.

Q. It was not as well mineralized?

A. No.

Q. Well, we see where our differences of opinion come, then. You positively state to the court that they have

940 no vein material between those red parts, do you?

A. I mean to state that there is minerals in places in this quartzite outside of the vein, not only in that quartzite, but back in the slates in the footwalls there are specks of galena that you can find away back.

Q. I am not asking about that; I am asking about this. Is that quartzite mineralized between those points where you have omitted the red on the model, drift 414 west?

A. In spots, to a limited extent.

Q. All along?

A. No, or it wouldn't be in spots.

Q. At spots. Why didn't you give us the spots; you gave us the spots up here in red; why didn't you give us these spots ?

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A. Those are in the vein, and these are in the quartzite through this large body of ore lying over there, which has impregnated in some cases the country rock immediately adjacent to the vein. They are not mined at all, but there is a little mineral, just as there are specks of mineral even back here in the Fir tunnel, away back of this that we have called the vein, or the fault there.

Q. Now Drift No. 205 west. If I do not misquote you,
941 I think you located a fault in there?

A. There is a fault marked on the model at the point you indicate, and one still further to the south.

Q. Do you identify the fault which is marked on Drift No. 405 west as the fault which causes the separation of the Frank, the Gray and the May ore bodies?

A. Yes, possibly a splitting of that fault upward, so that above it branches, or a part of the same fault below.

Q. Now, it does not have as much throw or as much effect upon separating the vein at the point in Drift 205 west as it did in the workings of the Ontario, does it?

A. It does not.

Q. What is the difference in the effect of that fault, at the point Drift 205 west and between those ore bodies in the Ontario?

A. The separation of the ore bodies is much less.

Q. Do you know how much less?

A. Than in the upper workings. It is about 80 feet in the 200 foot level, and it is nearly 180 feet in the workings below.

Q. Isn't it a fact that instead of the fault at Drift 205 west
942 on the right hand side of that near the top of Raise 314 west being the same fault, that that fault is found here in the west on Drift No. 205, as marked on the model?

A. As I stated they are perhaps—possibly both of those faults are branches of the one below.

Q. And taking the one to the west of drift 205 west there is in the stope immediately above that in the Stewart workings a plain effect of a fault in the way of gouge, but not enough to separate the vein?

A. That is true.

Q. Then don't you think that the fault is lost right there where it shows its last effect on the veins as you know it?

A. Well, I would not want to say that, because the plane of fissuring continues.

Q. But the separation is no longer present in the stopes, is it?

A. The stope is continuous on both sides of the fault. There has been some little faulting, but not sufficient to disconnect the vein.

Q. You distinguished the fault, the place that the fault would have occupied, if there had been a separation, by the
943 gouge that is disclosed in the stope?

A. Yes.

Q. Well, what is the strike and dip of the fault which you think may be a part of No. 11 fault which is shown on the level to the right on Drift 205 west, or to the southeasterly of it, compared with the strike and dip of that fault as shown in the Ontario ore bodies

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down at the point to the northwest of drift No. 205 west, indicate how it is disclosed in the stopes?

A. It does not correspond in strike with the fault below; it however, has such a dip that if continued down it would correspond; in other words, it is the same fault, it is simply a warped surface that is bent around.

Q. You could not identify that, as far as the strike is concerned, as at all the same?

A. They do not correspond.

Q. Is there any difference in the dip of the two faults disclosed on this level at Drift 205 west, on each side of the lettering?

A. That is timbered rather closely there, and I would not want to say just as to the condition. It has a rather flat dip as I recall it through there.

944 Q. Now there is nothing in the ground that enables you to identify fault No. 11 positively, above the stopes to which you have just referred over Drift No. 205 west, is there?

A. Not positively, there are faults above which may be, and which probably are, some of them the same fault.

Mr. FOLSOM: You are referring to the west branch of it, Mr. Dines?

Mr. DINES: Yes, referring to both branches, both of them. I think that is correct of both branches.

A. There are faults as shown by the blue coloring higher up which may or may not be the same fault.

Q. And they do not correlate in dip or strike?

A. Not exactly.

Q. And if you did identify them as the one, there would have to be, as you have described it, a warping in each instance, except that you can identify that at drift No. 205 west on that level with that between the two ore bodies in the Ontario?

A. No more positively than I can identify them above. I believe this is one branch of the same fault.

Q. Well, the dip and strike correspond more nearly than they do in the other instance, do they not?

945 A. Not the dip; the strike does.

Q. Now, drift No. 205 east is all in ore and stoped above it, is it not?

A. It is, and stoped above it as far as I know.

Q. And is it not true in the branch that goes out from drift No. 205 east, that that is all in ore, the ore generally all along there?

A. That is not true; I should qualify that by saying that I think that the drift is not accessible now, but some two months ago I did succeed in crawling through some holes there, through some very badly crushed timbers, and it has every appearance of having been stoped above, that is, the chutes go on straight, so that I think it is in ore, in the sense that the vein lies above it, but it is a crosscut in my opinion right in the footwall.

Q. Does that show the same mineralized condition that you refer to in drift No. 415 west?

A. No.

Q. Not so much mineralization there?

A. I have seen no mineral in the crosscut itself; however, it is badly crushed and I have not seen every part of it.

946 Q. And of course you don't know what it shows in the places where you have not seen it?

A. I do not.

Q. Now, you gave a course of north 21 east as the strike of this vein; is it not true that that vein you refer to is the one that is found out to the south of the Senator Stewart Fraction and north of the Ontario, south of the Switchback or in the Switchback?

A. That is true. It has a course along the hanging wall of the vein.

Q. And that is clearly a branch of the Stewart vein, is it not?

A. I consider that the main vein. As proof of the fact that the stopes do come down from the level above, come over to that place.

Q. Well, would you call the Stewart vein then in the workings the branch, then, or this?

A. Which working?

A. Well, the workings of the Stewart, speaking of that vein on which those workings are done, on the Stewart vein?

A. No, they are on some vein which we call the branch, because we f-und no vein which we call the branch, but the stopes

947 go back into the main 300 level.

Q. Isn't — a fact that you have a wider departure in this portion of the vein where you get your strike of north 21 east down in the Switchback property than the strike in any other portion that you know?

A. The vein there is more nearly north and south than in any other parts.

Q. And it lies in a different plane of dip from the other portions of the vein in the other workings, does it not?

A. It is flatter from the 300 to the 400 through the stopes, and that is the average dip.

Q. You never got a course of north 21 east in any other part, did you?

A. No.

Q. And yet that course of north 21 east that you put in your other averages, it is not that portion of the vein, it is outside of the claim and down in the switchback?

A. I gave the course of each level separately.

Q. Now, raise 214 west is upon ore, is it not?

A. Yes.

Q. And so are the drifts 208 west and 208 east, both of them, are they not?

948 A. A portion of the drift is on ore and a portion is not on ore.

Q. Is it not true that those levels are entirely on ore, well, I will not say ore, but on vein?

A. Well, there are two places where the vein is interrupted by fault.

Q. You have not colored it in fault material?

A. Yes, it is colored with blue here and there.

Q. But you have colored this portion of it in gray?

A. This portion back here which is colored gray was inaccessible.

Q. Well, every time you could not get to an openeing, did you mark it as not on vein at all?

A. No. The vein is seen in that level further to the south, and is colored red; the red is even carried out onto the sides of this drift. The vein in my opinion lies over this, and that is a lateral, back toward the foot of the vein.

Q. Isn't it true that for every foot of that distance it is in vein material?

A. Well, I can't say where I have not seen it, and with the explanations I have made, the vein in my opinion lies to the south of it.

949 Q. Mr. Wiley, where you have been going along a working on ore and your commercial ore terminates, but there is vein material still, did you color it on the model red or gray?

A. Red.

Q. So you have not confined the red workings simply to ore?

A. It is the vein, it is meant to represent the vein.

Q. Now, I ask your attention to Plaintiff's Exhibit No. 1, as I am not familiar with the other map. I understand there is a little difference between them. Have you examined the upraise run from the stopes above the apex drift on Exhibit 1?

A. I have.

Q. Did you find a vein in that upraise?

A. In the lower part of that upraise it plainly follows a vein. The upper portion is on a fault coinciding in my opinion with the vein in that section; there you can say that that is upon the vein.

Q. If it be on the fault, the only effect would be to draw that portion of the top of the vein further within the lines of the Senator Stewart Fraction, would it not?

950 A. Yes. I want to say in that connection that the vein is plainly shown by the crosscut from the apex drift which breaks into caved portions above the stopes, not only this crosscut, but in a drift which is not shown on this map going west, there was a little marking on the side showing that the stopes below lay south of this drift, the same as they did there, only not so far.

Q. Now, is that the top of the vein, that the stoping has been done on below, about in the position there of the apex drift as shown, drawn a little southerly, if you wish it?

A. Yes.

Q. How wide is the vein at that point?

A. It is near the surface and badly oxidized and crushed by these faults, so that I think it is impossible for anyone to lay his pick on the exact limit of the vein in the ground, but there is a big wide vein there, prehaps 20 feet in some places in width.

Q. Well, the crosscut to the hanging from the apex drift is about 30 feet long, isn't it?

A. About 30 feet.

Q. And the hanging wall is not in it yet?

A. Well, I don't know as to that; it is caved, and the
951 hanging side is closely timbered to prevent further caving.

Q. And did it cave right on down on the s-opes below?

A. I presume so; to something below.

Q. Whatever may be said about any little differences about the exact inch or the exact foot of the location of the top of the vein, the top of the vein is within the Stewart lines at that point, is it not?

A. It is.

Q. It can be traced, can it not, from the point marked W2 on Plaintiff's Exhibit 1, in an easterly direction, following the line of the red that is marked on the apex drift, past the crosscut to the hanging wall to the point W prime in the same drift as shown on Exhibit 1?

A. The fault which lies immediately under the vein can be traced. The vein undoubtedly follows substantially that same direction.

Q. And that would simply throw the top of the vein a little bit more to the south than as indicated on Exhibit 1, of the Plaintiff?

A. Yes.

Q. And the throwing of that top of the vein to the south would serve to decrease the curve that is shown in the apex drift on
952 Exhibit 1, if you are correct in your opinion, would it not?

A. Well, it would decrease it in the sense that the bend would not extend as far to the north.

Q. That is what I mean; it would bring it to the south.

A. It would rather increase the abruptness of the curve.

Q. Well, it would decrease the extent northerly of that apex, and bring it more to the south as indicated by the pointer on Plaintiff's Exhibit 3, would it not?

A. The apex would simply lie a little further to the south than you have shown it here with your red coloring, as I indicated.

Q. Now, I call your attention, Mr. Wiley, out in this western portion of this drift, I mean the apex drift as shown on Exhibit 1. If you remember, on the left hand side, as you came in in a westerly direction, low down in the drift, there was some galena ore there?

A. There is some, and I saw galena in the breast of that drift on the left hand side as they were working, something that you cannot see today.

Q. Well, that is not a fault?

A. No, except that there is a fault, but I do not identify that with any of the main faults.

953 Q. But you do not think that where that ore is shown in the vein that is from the fault?

A. No, I think that is from the vein.

Q. The fault that you speak of is where the Clancy fault is referred to as appearing in the west branch of the apex drift?

A. Yes, and besides the Clancy and the Osborne, I think there is a third complication back there.

Q. That is not developed, is it?

A. Developed by your drift.

Q. I mean developed so that you can tell anything about it or classify it?

A. No, not to connect it with other faults.

Q. How far in an easterly direction, coming from the point where the crosscut goes into the apex drift, can you trace the top of the Stewart vein?

A. To the Osborne fault.

Q. Have you traced it to the Osborne fault?

A. When I say that I mean that the fault which is shown in there is the Osborne, although it has not been connected; there is a big gap from the fault in the development of the apex and any development of the fault itself between there and the lower stew-
954 art tunnel.

Q. Between the points W2 and W prime, then, if that be the place where the Osborne fault is encountered that you refer to, there is no question of that being the top or apex of the Senator Stewart Fraction vein, is there?

A. That is near the top in my opinion, near the top and apex of the Senator Stewart Fraction vein.

Q. And there is no dispute as to the top of that vein between those points as you trace it on down, being within the Senator Stewart Fraction, is there?

A. Yes.

Q. Where do you mean; at the first point of contact with the Osborne fault?

A. Yes.

Q. Now, we have the natural apex along this apex drift, and in the upraise and in the crosscut to the hanging wall, and all along that apex drift, until it encounters the Osborne fault, and that is the place that you think we lose the apex, is it?

A. You certainly do.

Q. We certainly do?

A. Yes.

955 Q. Do we lose the apex at that point because it comes in contact with the Osborne fault?

A. No, not for that reason alone, and when I use the term apex, it is not in any legal sense, but simply as describing the top of the vein.

Q. Well, this is the top, nearest the surface, isn't it?

A. Yes.

Q. If I assume a vein—I will relieve you from all responsibility of making it; I will assume a hypothetical vein that has a line of apex, and you see I have this paper marked so it can be read into the record, the degrees, 10, 15, 20, 25, 30, 35, 40, 45, 50. Now, I am assuming, and I will relieve you of all responsibility of assuming that as the top of the vein as it goes indefinitely in its course; I am assuming that by ordinary attrition, or the wearing off of the vein by natural processes, it is cut down, in fact I have given your vein an angle of ten degrees (cutting paper with scissors). If it was the top then, is it the top now or the apex?

A. Under the conditions, you state, I would call it still the top.

I will admit, to save time, that you would have the top if you cut it down square.

Q. I would still have it with an angle of 50 degrees?

A. Yes.

956 Q. And then if you take 50 degrees, and I cut it in this way, I would still have the original top or apex there of the vein that has been sliced off at an angle of 50 degrees; that would still be the apex down to that point, wouldn't it?

A. That would still be the highest point of that particular vein.

Q. And that would be the highest point, whether it is cut down by the gradual processes of nature, freezing, thawing, gravitation, or whether it is cut off at that place by a fault, would it not?

A. It would, but if you have the condition—I think it is but fair——

Q. Well, wait a minute.

A. I think it is but fair that I should continue and go a little further.

Mr. DINES: I don't think the witness has the right to take my line of examination.

Mr. FOLSOM: I was going to ask him about that myself.

Mr. DINES: Well, if he wants to explain—I will relieve him of all responsibility in that matter and ask him.

The COURT: I think you can wait until your re-direct ex-

957 amination.

Mr. GRAY: It seems to me that if he wants to explain in this connection he ought to be allowed to do that.

Q. I don't wish to cut you off, Mr. Wiley, if you have anything to explain?

A. If the vein is undercut, as shown by the cut at the lower edge of the paper, then, instead of having a top, we not only have an edge, but we have a lower edge, and how that could possibly be called the top or apex, if it were cut off under here, as it is in this case by the Osborne fault, dipping down under it and cutting the lower edge of the vein,—I can't for the life of me figure anything but a bottom.

Q. You think it is a bottom edge; that is, if I assume that this vein at one time had a position where the course of the apex was easterly as indicated by my pointer on Exhibit 1, that if the Osborne fault comes on at a strike of north 80 west approximately and a dip of 70 degrees to the southwest, that that would form an angle of intersection between those planes that is similar to the angle that you cut on the piece of paper and called it an undercut. Is that your statement?

958 A. It is similar.

Q. Isn't it mathematically impossible for a plane dipping at an angle of 70 degrees and striking north 80 west, to intersect with a plane which meets it at an angle of 30 degrees and dipping 45 to 50 degrees in its steepest place—from 30 to 50 would be fairer probably—to give that form of an edge?

A. That is a different proposition, and moreover, all of your propositions seem to not quite correspond with the facts. You took

a plane with a strike of north 80 west; that you assume as the strike of the fault?

Q. Yes.

A. That is entirely a different proposition from the strike as shown on this map by your red line marked apex; that is about north 40 or 41 west.

Q. Well, say it makes an angle of 40 degrees; I don't care about that; just as we had here from 5 to 50 degrees, and you said practically that I could go on up to 90 and you would still think that it was the top edge till it passed 90?

A. Yes.

959 Q. Now, if this is passed on a plane of its strike, north 80 west, and if you wished to change that to some other direction, we have plenty of room to spare, and the plane of that vein is passing on its strike as this is, making an angle with the other of about 45 degrees, if that will please you any better, and a dip of from 30 to 45 degrees, is it possible for it to cut an under edge or a bottom edge as a mathematical proposition?

A. It is shown on that model, those are the conditions as they exist.

Q. You think that is shown on your model?

A. Yes.

Q. Now, in your model you have taken a surface; at how many points have you had the Osborne fault disclosed actually in the ground that would give it the curves and folds *and folds* and the position that you give it in your model?

A. At the points as shown upon the model.

Q. That is, you had a point at the Fir tunnel?

A. We have three points on the Fir tunnel level?

Q. That is right. Three points on the Fir tunnel level, and you have one point on the——

960 A. You have beside that the raise that goes up along the edge there.

Q. You have the raise there, and a few feet away you have a raise going up east?

A. And a raise which shows the fault, and there it is materially different in direction. The warping of the celluloid is simply caused by fitting it to the workings that actually disclose the fault, that is all; it becomes bent to the position it happens to take as the result of fitting it to those points.

Q. Then, instead of having a dip to your Osborne fault as shown on this model, you have let it take a dip as the fitting together of the model has compelled it to take, to show to the court as an exact representation of the dip and strike of the Osborne fault, have you?

A. Yes, sir, and it shows it better than anything else could. The fact that it is an irregular warped surface, and not an absolute mathematical plane—neither nor the fault are regular; they are both warped surfaces.

Q. But in making both you have not taken any scale, but you have taken them as the model drew the celluloid into position, have you?

A. We have attached the blue celluloid to the drifts where
961 the fault is shown, and the result is that the sheets takes the form as shown upon the model.

Q. Thence your model, as far as the position of the dip and strike of the Osborne fault is concerned, if not for the purpose of showing to the court the particular character and extent of the folds that the actual connections make, and you are not claiming that it is exactly as the Osborne fault is underneath the earth on its actual dip and strike?

A. It is as exactly as can possibly be portrayed, the character of it, with the explanation which I made.

Q. There are some things impossible——

A. One moment, please, that this simply represents the plane of the fault, and not the thickness of it.

The COURT: Yes, I understand that.

Q. One moment, Mr. Wiley. You do not claim that these poles of this fault, with its variations in dip and stripe, are an exact representative of the conditions as they are under ground, but that they are as nearly as you can possibly get the celluloid to represent them?

A. They are exactly as they are underground, and the portrayal is as exact as the nature of the material attached in this way will permit.

962 Q. You have a surface represented there of how many square feet by the scale?

A. It is fifty feet to the inch.

Q. Will you briefly tell me how many square feet are represented in your surface of the Osborne fault?

A. I should say 400 square feet; nearly 20 by 20.

Q. Well, it would be more than that, wouldn't it?

A. Well, I will measure it.

Q. Well, perhaps you are a better guesser than I am. I think it is more than 400 square feet?

A. Well, I gave it to you as altogether too much. It is 16 instead of 20, and here it is 13; it is 16 by 13, so I made it too big; it is not near 400 square feet; it is nearer 300.

Q. How many square feet is that, 400?

A. I did not mean square feet in the ground; I meant square inches on this model?

Q. Well, how many square feet would that make in the ground? That is where I thought you were wrong?

A. Well, that is different. I did not understand. It would be about 800 feet in strike and about 600 feet in length; perhaps 48,000 square feet.

963 Q. 48,000 square feet you have represented in that model of the Osborne fault, an irregular surface, with the marked changes and folds, both in dip and strike?

A. It is 480,000 square feet, that is the right amount.

Q. How many square feet of that entire surface that you have taken are actually disclosed under ground?

A. Of course the entire area is an extremely small portion if figured in square feet, but if you figure in the height, the entire

height of the Osborne fault from the 400, from the Fir tunnel——

Q. I want to know how many square feet. We put it in square feet in the ground, and I want to know now how many square feet of actual surface are disclosed there to enable you to give that representation.

A. That would require quite a calculation to find out how many square feet.

Q. It would be a very few, would it not?

A. Comparatively very few, certainly, in square feet, but if you take the height, it would be a very large portion of the height.

Q. Then it follows, Mr. Wiley, that when you answer my hypothetical question by saying that it is shown on the
964 model and your model is not a mathematical representation, that it cannot demonstrate the falsity or absurdity of my mathematical proposition?

A. Now, I think if you will permit me, I can illustrate. Take the Fir tunnel level, it is only at three points, and the square feet that that would make would be about the size of that door, at the three points, but I do mean to say that that represents the strike of that upon the level with absolute accuracy. There might be some slighty sinuosities if you drove a drift connecting these different points. This model does at that point represent the exact strike of that, although it is developed in a square area for only a very small part of the entire area. The same explanation applies to each level.

Q. But you have taken those folds and projected them on the sheet?

A. There is no projection about it.

Q. But you have taken them as the model would bend it and warp it and underneath the ground you had no connection with metal points to warp it and wire the Osborne fault, so you have no comparison between the two at all, have you?

A. Why, certainly we have the basis of comparison. We
965 have a fault which we know is continuous; we have it developed at a very great number of points over that limited area to determine its position. Those points may be in square a very small portion of the entire area, but they are amply sufficient to determine the shape of that fault and where it lies exactly.

Q. You don't claim that that is mathematically a representation of the Osborne fault? Let us understand each other. Do you say to the court that that is an exact representation of the fault?

A. If you have a given dip and irregularities such as there are in the Osborne fault, it is the best illustration that I know of that could be made.

Q. That does not answer my question. You say this is an illustration. Do you say it is an exact representation? Answer my question; it is or it is not?

A. It is as nearly an exact representation as I can make.

Mr. DINES: I ask the witness to answer the question.

Mr. GRAY: He has answered it four or five or seven or eight times at least.

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Mr. DINES: No, he has not answered it yet.

966 The COURT: Let him answer it, and then explain.

A. It is not an exact representation in the sense that every inch of this surface corresponds to every particle of the fault in the ground. If there were an excavation; for instance if the assumption that was made were true, that this fault was all eroded—the country was all eroded I do not say it would conform at every spot, but it is as near an exact representation as the developments in the ground will permit, and I believe that it is for practical purposes an exact representation.

Q. Now, you say that for practical purposes it is an exact representation. I understood you to say before that it is not an exact representation. I wish to know if you desire to quality your former answer?

A. I endeavored to qualify it by my explanation.

Q. Do you claim now that this is an exact representation and not an illustration?

Mr. GRAY: I object, that has already been answered and explained as carefully as anybody could.

Mr. DONES: Yes, but Mr. Wiley understands what I mean, and he knows the point that I am trying to get the truth of just as

937 well as I do. He does not claim, and does not wish under oath to state that that is an exact representation of the dip and strike of the Osborne fault.

Q. Do you, Mr. Wiley?

A. Not at every point.

Q. Calling your attention to the outline of the apex of the Senator Stewart Fraction vein as we claim it, do you or do you not believe that the top of that vein as far as developments may enable you to determine, is approximately at the point where the red line indicates its connection with the southerly side line of the Senator Stewart Fraction?

A. No, I don't think that represents the top, the ultimate top. It represents the top of this faulted section approximately, that is, except that this curve is made in a way for which I do not see any justification, based upon the workings and stopes on Exhibit 2.

Q. You do believe that that apex crosses the southerly side line of the Senator Stewart Fraction?

A. That portion of the vein beneath the Clancy fault, yes.

Q. And unless that vein is correlated by some actual development with a vein to the west, that is the same vein you think that

968 that would be the top of it, would it not?

A. I think it is the top of that section, but I think that it at one time extended further, and that that faulted section is represented in the upper Stewart tunnel.

Q. Yes, but that faulted section is not being shown in the crosscut; there is not sufficient evidence to enable one positively to determine it as a part of the Stewart vein at the present day?

A. Not positively, but just as positively, I think, as we identify the Gray and Frank stopes as at one time parts of the same vein.

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Q. Did you go into the stopes and other upraises as you go in and down northerly and northeasterly across, following the line of the red on Exhibit 3?

A. I did, into everything that was accessible, or seemed to be in ore.

Q. Are the tops of those stopes near the surface of the ground?

A. That is a comparative question. They are not near the surface, no.

Q. Well, how near?

969 A. The nearest point is probably raise No. 2 west, something less than 100 feet from the surface.

Q. Do they disclose in your opinion such conditions of vein material as to indicate from their nature that they were approaching the top of the vein?

A. No, the only indication that they were approaching the top of the vein was at two points where I saw the Clancy fault, and as I stated, I don't know how much the throw was. I saw nothing whatever in the ground to give me any idea as to the extent of the throw.

Q. And without the throw, you could identify or correlate the disconnected portions of the vein, can you?

A. Certainly not.

Q. Now, these stopes as they rise on Plaintiff's Exhibit 2—I refer to the stope map, Plaintiff's Exhibit 2—the line of stopes I refer to as it goes up, that line of stopes underlying the course of the apex as traced on Exhibit 3 and Exhibit 2 would indicate about the course of the vein as we show it on Exhibit 3, would it not?

A. Yes, except that the stopes do not make that curve that is shown on Exhibit 3.

Q. The stopes over to the right hand side?

970 A. No, those down here would certainly but I could not myself use that place away down in the ground in determining where my apex is in an entirely different place in the vein.

Q. And you think for this portion you must look for the apex up here where you have described it in connection with the apex drift, do you?

A. Yes, the apex of that portion.

Q. You think that is the apex?

A. Although there is a disconnection there before it reaches over to the fault.

Q. But this is the top of the vein nearest to the surface there at the apex drift?

A. That is near the surface.

Q. You don't know whether this vein as it was originally constructed was in the form as shown here in this outline, a part of it a crescent, and then a cave in the course of the apex again, do you?

A. Oh, sure; without having seen that, that is one thing that I do know.

Q. You think it extended originally in a direction like that?

971 A. It did extend substantially in the direction as shown by that portion of your apex.

Q. That is in a line more in a northwesterly direction, following substantially the course—a northerly and southerly course?

A. Not a northwesterly course; a direction substantially north 30 east.

Q. As my pointer indicated on the map?

A. Yes.

Q. And you think then that this portion was bent down that way, do you?

A. That portion is bent down.

Q. That is the portion in the apex drift that you identify as the top of the vein, you think that was bent down in that form, do you?

A. Do you mean across the end line of your claim?

Q. Between W prime and W^2 on the apex drift it is north 30 east, isn't it?

A. I probably misunderstood you, because you traced with your pointer clear down and across the end line. Your vein is bent as it approaches the fault very materially.

Q. I mean this portion between W^2 and W prime, it begins
972 to turn there before it reaches the fault?

A. Yes, it does; in most of the levels there is an abnormal bend.

Q. And it is 200 feet from the fault where it begins to turn, the 200 foot level, and in the stopes below that it begins to turn at a greater distance?

A. Yes, that is correct.

Q. And you think the Osborne fault came through there and caused that bend, or some other fault, I mean the portion of the apex that I indicate, that the Osborne fault made that bend?

A. I said I did not know; I did not know whether the Osborne fault made the bend or whether it was there before. The bend is there, however.

Q. And that bend had the effect of changing the course of the apex from north 30 east to a course very much more nearly east.

A. It threw it more nearly east for a short distance.

Q. And that when it approaches the Osborne fault you think the apex is lost, it has lost the original apex because it came in contact with the Osborne fault?

A. Why, certainly, it was dislocated. I heard someone
973 say that it was moved 6,000 feet, and cut off by the fault coming down under it.

Q. Yes, but if this vein was in that position, the position of the apex, at the time the Osborne fault cut it, this portion went down as much as that, didn't it; all the section that the Senator Stewart Fraction is in south of the Osborne fault would be in that portion of the plane of the mass that went down, wouldn't it?

A. That portion that was originally north of the fault, yes.

Q. And it would still maintain its relative relation at the top edge and the bottom edge and the si- edges, although this vertical displacement was 6,000 feet, would it not, if it all went down together?

A. Yes.

Q. Outside of any question of crumpling and strain that would account for these different things; you have evidence in this vein in

the body of the Stewart workings of an anticline, haven't you, as it goes down?

A. No, I haven't seen that. I think your anticline is broken by the fault.

Q. Isn't that a folding of the vein something like this that
974 comes up to a point and goes down on both sides?

A. No, I haven't seen that.

Q. You did see a decided fold where there was much disturbance in the stratification, and where the vein seemed to be crumpled?

A. Do you refer to the Deering fault?

Q. No, sir, I refer to the flat place in the vein?

A. That does not make an anticline.

Q. No, I understand the flat place does not make an anticline, but aren't there places containing, not a perfect anticline, but showing a folding in the nature of an anticline?

A. Showing a flattening and steepening and bending of the surface, making of it an irregular figure, the same as in the Osborne fault?

975 Q. Without a break, if it is a break, you would call it a fault?

A. Yes.

Q. And it is classified then under another vein. But those irregularities in a vein do not serve to change the dip of a vein to the strike, do they?

A. They serve to locally change the dip, yes, sir.

Q. You may have anticline along a horizontal plane for some distance where the apex of your anticline would show the course of your vein, would it not?

A. You might assume such a condition.

Q. Is that not true in Leadville mines?

A. That might be true in many places.

Q. You do not think that because a point in an apex, one point, is higher, in a higher plane of elevation than another point in an apex, makes the lower point any the less an apex point if it is the top of the vein nearest the surface?

A. Certainly not.

Q. Then it is not the declination from the apex drift to the point where we claim the apex crosses the easterly side line of the
976 Senator Stewart fraction that affects your judgment upon that question.

A. Not in the least. It is simply the fact that the vein is entirely cut off and gone, cut off on its edge.

Q. You admit that it is an edge, don't you?

A. It is an edge.

Q. You admit that in going *fomr* the workings upon that you go up to the top of it as it lies against the Osborne fault?

A. You can follow in a sinuous way, yes, sir.

Q. No, not in a sinuous way. I will ask you if the workings came up on a straight, regular, true dip at the points where this vein runs against the Osborne fault do not lead you upward before you get to the highest point of the vein against the fault?

A. They lead you up to your apex under the Clancy fault or to

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the other apex in the Siligo tunnel, but not to the apex under the Osborne fault.

Q. I call your attention to the cross sections that were introduced here and identified of the plaintiff, and ask you if you found any mistakes in those cross sections?

A. Yes.

Q. You have. Where?

977 A. In their representation of the vein.

Q. Well, what representation?

A. They magnify the size of the vein. They steepen the dip of the vein in many places.

Q. I call your attention to plaintiff's exhibit 9, cross section V, and particularly to that portion of it that lies in contact with the Osborne fault. I will ask you if from the top portion in red, if a person was standing there and would take a round object and put it down, if *he* would not roll down (indicating), assuming there was nothing physically to interrupt it in its passage, roll down along the line that I have indicated with my pointer?

A. On your maps, sure; in the ground, no, it would not roll an inch.

Q. It would not roll an inch?

A. No.

Q. You think then that there is not a difference at the point shown on section V—is not in a higher horizontal plane than the point shown at this part of this cross section that I show you?

A. Yes, it is in a higher plane.

978 Q. Well then, wouldn't it roll down, Mr. Wiley?

A. No, because this is entirely wrong in its position.

Q. What do you mean by "this"?

A. This portion of the vein—the upper portion showing the highest point on this vein is more than fifty feet higher on this map than it is in the ground. This section V happens to be very close to the point where this sketch that I introduced was made, and the vein instead of having such a steep inclination as that has in its steepest place 19 degrees, and the apex instead of being at the point as shown upon this section 5 is actually seen in the lower Stewart tunnel level itself.

Q. Does the vein not extend up above this working here? This working is in the vein, isn't it?

A. It is at the top of the Stewart tunnel level itself almost immediately on this cross section 5.

Q. I will ask you if you do not have to go up higher than that to get to the very highest body of ore lying against the fault?

A. You do not, because you get the very highest body of ore right in the drift itself; it is easily to be seen; and above that is the

979 fault. That sketch shows it just about twenty feet of that point.

Q. Now, Mr. Wiley, you gave us a sketch that you prepared which has been identified here as exhibit "K". I show you a photograph, as it happens, of the very same place, which I will ask to have identified, and I will ask you how you account for your giving a dip of 19 degrees when the actual dip is 36 at that point?

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Mr. FOLSOM: I object to the use of the photograph, it not having been proved that it was taken at that point.

Mr. DINES: Here is one uncolored, if you object to the color. The color was given to show you the color was made not by the photograph——

The COURT: The photographs have not been identified.

Mr. DINES: I will have them identified.

Mr. FOLSOM: His question assumed that they have been proven to have been taken at that point.

Mr. DINES: I will state to the court that they are so represented to me, and I will follow it up.

The WITNESS: To save time, I will say they appear to me to be the same point, if that would be just the same.

Mr. FOLSOM: All right.

The COURT: If your counsel does not object, I shall ac-
980 cept them.

Mr. FOLSOM: That will be all right.

Mr. DINES: I think before we identify these, you had better mark the tops.

Mr. GRAY: Oh, no.

Mr. FOLSOM: I understand there is a difference between your witnesses and ours as to what is the top.

Mr. GRAY: Your witnesses have got it turned around.

Mr. DINES: No, the top is shown here.

The said photographs were thereupon marked Plaintiff's Exhibits 18 and 19 for identification.

Mr. DINES:

Q. I show you plaintiff's exhibits 18 and 19 as they are identified, and ask you if you are able to identify those photographs as photographs of the same place that you took exhibit "K" from?

A. I think those are on the same point except that the photographs does not show but a portion, probably about one-half in length, of the amount shown on the sketch. The photograph does not show the full length.

Q. It would be more than a half, would it not?

A. Slightly over, possibly.

981 Q. Well, are you able to say whether or not those are the same representations of the same place that is covered by your exhibit "K;" if not, I prefer not to have you identify them?

A. They are correct representations except that the color often distorts the position of an ore body, but they show substantially the conditions as they are there in the ground, and except for the fact that the top of the ore body which is shown in my sketch is behind the black shaded portion and not shown at all upon the photographs, they show the same body of black ore carrying considerable galena which is shown upon the sketch. The dip substantially agrees upon the photograph on the under side. The shading in red has been carried a little higher into the white material. There is a great difference between the black material on the ground and the quartzite or black material of the ore, and the shading in red has been carried on the photograph higher there than the ore really goes, unless it is

due to a distortion in the photograph; it may be; it looks much steeper than it really is on the ground. The dips as given on the sketch are as actually taken on the ore in the crosscut.

982 The COURT: They can be admitted under the admission of counsel.

Mr. DINES: Well, your honor, I will introduce—as he raises the question of some distortion, I think I had better wait.

The WITNESS: I do not mean to say exactly distortion, except——

Q. You mean they sometimes distort—you mean the question of prospective that affects the angle at which you take it?

A. That is all; it appears different from the photograph. Unless you have got your camera right square with the face, if you took a view slanting, the photograph could easily mislead.

Q. Mr. Wiley, you say you can make a dip by a picture steeper than it actually is. You can make that flatter, but you cannot make it steeper, to save your life, can you?

A. Yes, sir.

Q. How can you?

A. If your camera is not square with the view taken.

Q. That way, yes, by not having your camera level?

983 A. Whether your camera is level or not, it don't make any difference. For instance, in photographing the face of the drift here four or five feet from the face, your camera here, and the portion over there is ten feet away, you will have a distortion; that is what I mean.

Q. But you would not have an increased dip, would you?

A. You would have a change, it might be one way or the other, yes.

Q. Are you sure about that?

A. Yes, sir.

Q. I will ask you to take the dip as shown on this photograph, Exhibit 19, and what dip is given to the vein there?

A. The vein as shown in this photograph is impossible to distinguish. It looks to me if I had not seen the place, I would be utterly unable from this uncolored photograph to say anything except that we had what appeared to be a mass of rock, or ore with white portions through it, a considerably lighter area in the upper right hand corner. I would be inclined to think that the material in the bottom was ore the same as the material higher up, if it was right as photographed, of ore, whereas I know as a matter of fact

984 that the material in the bottom which looks precisely like that above is quartzite and not ore. A great deal of that may be due also to the flash which makes some parts dark, as for instance, the shadow that a post will make——

Q. My question was simply to try and see if you can get the dip; if you cannot get it, you can say so.

A. The dip of the most markedly shaded portion, through here, which might be assumed to be the dip of the ore body, is about—taking it from the edge of the paper—twenty-six degrees. The dip of the lower portion which has a distinct, apparent line of separa-

tion from that below has a dip as measured on the edge of the paper of eleven degrees. The dip of the portion which is a separation apparent between the white material above and the ore beneath has a dip of about thirty-two degrees. So you can get most any dip as measured on those places.

Q. Are the ore bodies in the Ontario part of the same vein that is disclosed in the workings of the Senator Stewart Fraction?

A. I think they were at one time, yes. They are faulted today.

Q. Can they not now be connected on ore and is there
985 not sufficient development work to correlate the bodies of ore in the Ontario with the workings on the vein in the Senator Stewart Fraction as the same vein?

A. Yes, that is, you can follow from the Frank stope up on one segment of the vein and from the Gray stope on another.

Q. What is your best judgment, are they the same vein or different veins?

A. I think they are faulted sections of what was once the same vein.

Q. Don't you think they are a part as you follow upon ore from one to the other of the same vein?

A. I cannot follow on ore from one to the other today. I have described on the model that there was a flat portion through which I have not been, and did not know what was in there, and that was the only possible connecting link that is shown upon Exhibit 2, the stope map; there is only one place shown on that map and that is in the middle where there is a little isthmus connecting the two red upraises.

Q. And you have not been up in there?

A. You cannot get through there today.

986 Q. Assuming that to be continuous on ore, would it be identified then, under that assumption, as a part of one and the same vein?

A. Not necessarily, because there might be two faulted sections which had faulted opposite each other.

Q. Now, Mr. Wiley, you have those veins or vein developed there, you have been all over it, you have an opinion about it; under the facts that you stated, faulted sections, are you able to identify the two sections?

A. Not absolutely, but I believe at one time they were parts of the same vein, that is, as far as I can go.

Q. They are parts of the same vein, are they not, as a geological matter, even though they are interrupted by the fault, if you can correlate and identify them.

A. They are separate today, if they were once the same vein.

Q. I say, in a geological sense, they are considered the same vein if you can correlate them, the two parts, the parts separated can be correlated, they are still the same vein, aren't they?

A. I would not want to be more specific than saying once they were the same vein, but they have been separated by faul-
987 ing, that describes all I know about them.

Q. You, of course, do not pretend to be able to tell how long this cutting of the Osborne fault occurred?

A. Hardly.
Q. You know at the time these locations were made, at least, that they were substantially as they are now, don't you?
A. Yes, sir.

Mr. DINES: I think that is all.

Redirect examination.

By Mr. FOLSOM:

Mr. FOLSOM: I offer the model now in evidence.
Mr. DINES: We object to the introduction of the model in evidence for the reason that up to the present state of the record it is admittedly inaccurate, no offers made to make the correction; the witness has conceded that there are portions of it in the vein that are not colored there in red; he pointed out one or two himself, and there are others that we claim as such, and therefore we shall object on the ground that the model has not been proven.

The COURT: The objection will be overruled. The model
988 will be admitted.

The said model was thereupon marked Defendant's Exhibit "L," admitted.

Mr. FOLSOM:

Q. Mr. Wiley, you were asked about some ore in the 200 crosscut. Is that the same ore that was referred to by Mr. Winchell as a part of No. 2 vein?
A. I think so.
Q. That is the vein in the northwest corner of the Stewart?
A. Yes, sir.
Q. Is the one that he classed as the No. 2 vein?
A. Yes, sir.
Q. I wish you would point out on Plaintiff's Exhibit 1 the two raises in which the fault material you said was disclosed about which you were asked in connection with that photograph, that first photograph, and you answered by saying that it was disclosed——
A. (Interrupting.) Plaintiff's Exhibit No. 1 shows one raise in a drift; there is another raise up there fifty-five feet which is not shown at all on this exhibit, but they both extend upwards upon the fault from the drift running easterly from the main fir tunnel.
989 Q. Did you state that an angle was formed of 40 degrees at any time?
A. I don't remember stating any such——

Mr. GRAY: No, Mr. Wiley did not. Mr. Dines in giving the course of the vein assumed a vein of thirty degrees.
Mr. FOLSOM: There was one other question that I should have asked on direct about the plaintiff's model.

Q. Have you examined that model, plaintiff's exhibit 15-A?
A. Yes, sir.

Q. Does that correctly represent what it purports to represent to the eye?

A. I think it is correct as regards the location of the workings so far as I know, but it is not correct in the appearance it has to the eye in that the vein as painted red upon the sheets of glass is wider than it is on the ground, and especially the apex against the fault is carried up very much higher than it exists in the ground as shown, for instance, at this one point which corresponds about with section 8 on this model, and it magnifies the apparent dip in that instead of being built as a box usually is with square sides the ends are
990 skewed in the direction of the dip as shown, is along a steeper line of dip than they would have been if made in the direction of the Stewart Fraction end line.

Mr. FOLSOM: That is all.

Recross-examination.

By Mr. DINES:

Q. Mr. Wiley, is it not a fact that whatever way you take cross sections you have an assembly of cross sections, that the general result to the eye is the same whether the cross sections are on one place of another if you get enough groupings of them.

A. By no means. If it had been they would have been made square within the box, if that were true.

Q. What do you think of that? What right have you to cast that insinuation. sir?

A. I am not insinuating, except that I never before saw a box built on a skew in that way; there is no reason it should not be, but I do state as a fact that the line as selected shows the sections to have a steeper dip both individually and collectively than if the sections were taken in the direction of the end line.

991 Q. The sections in this case are taken, you understand, at right angles to the Osborne fault, vertical planes at right angles to the Osborne fault. Is it not true——

Mr. FOLSOM: I think you are mistaken in that respect. I think only as to a small portion of the Osborne fault.

Mr. DINES: Every one of them are taken at right angles, true cross sections at right angles to the Osborne fault.

A. It shows for itself that the Osborne fault runs diagonally with the box, so that is. of course, shown right on the face of it that that is not entirely correct.

Q. But it is true that this model, I will tell you, that these cross sections are taken at right angles to the Osborne fault. Now, will you tell me why, when the matter we are comparing is the vein with the Osborne fault, that a plane at right angles to the Osborne fault distorts it when a plane oblique to the Osborne fault would not distort it, aren't you just exactly wrong and is not the reverse true?

A. The correct representation of a vein would be of course a cross section at right angles to its real dip.

992 Q. Mr. Wiley, will you answer my question. I tell you that that model is serving to show the relation between the

vein and the Osborne fault as it lies up against it. You have stated that that would distort it, would show a distorted view of that relation. I say, if the planes are at right angles to the Osborne fault, the planes of the veins, is it not true that they will distort less than they would if they extended obliquely to the Osborne fault?

A. If the object was to show the dip of the Osborne fault, that might be partially true. If the object was to show the dip of the vein, it is utterly wrong.

Q. The object is to show the relation between the vein and the Osborne fault. Is it not true that to do that it should be at right angles to the plane of the Osborne fault?

A. No, it is not.

Q. And it is not true—that is your idea of it?

A. It is.

Q. You frequently disagree with other engineers and with lawyers as well?

A. Sometimes.

993 Mr. DINES: That is all.

Mr. FOLSOM:

Q. The counsel referred a little bit ago to your Ontario case. The court found that that was a vein, did it not?

A. I don't remember just the findings.

Mr. FOLSOM: I do not know whether these cross sections have been received in evidence or not, but I will ask that the cross sections be admitted and the drawings also.

The COURT: They will be admitted.

Thereupon an adjournment was taken until tomorrow morning, Tuesday, January 14, 1913, at 10:00 o'clock A. M.

994 TUESDAY, *January* 14, 1913—10.00 o'clock a. m.

Trial resumed.

OSCAR H. HERSHEY, a witness called on behalf of the Defendant, being first duly sworn, testified as follows:

Direct examination.

By Mr. FOLSOM:

Q. State your full name to the reporter?

A. Oscar H. Hershey.

Q. Where do you reside?

A. Residence, Kellogg, Idaho.

Q. What is your occupation?

A. I am a mining geologist by profession.

Q. How long have you followed the business of a mining geologist?

A. About fifteen years.

Q. What experience have you had in studying mines for the purposes of further development and for the purpose of determining

the question of desirability of purchasing the same and in what countries?

995 A. The first few years of that fifteen years I spent in prospecting, and after that for a number of years I was engaged in making mine examinations with the object of determining whether they could be recommended for purchase. The last four years has been largely in the line of special geological studies of important mines.

Q. What mines have you had occasion to study in the last few years?

A. A few years ago I made a study of the mines of Douglas Island, the Alaska Treadwell, the Ready Bullion, and the Mexican mine.

Q. For whom did you make that study?

A. That was made for the Alaska Treadwell, Alaska United and Alaska Mexican Company.

Q. Now go on.

A. In October of 1908 I was engaged by the Bunker Hill & Sullivan Mining & Concentrating Company to make a geological study of the Wardner district in connection with the litigation which that company had with the Federal Company. When that case was settled in 1910 I became the consulting geologist for the Bunker Hill & Sullivan Mining & Concentrating Company, and I have held that position ever since.

996 Q. What other mines have you had occasion to study?

A. My mining work has extended in to practically all the western states and also in Nicaragua and Isthmus of Panama.

Q. Besides Alaska?

A. Yes, sir, besides Alaska.

Q. Have you ever made any contributions to the literature on the subject of geology?

A. Yes, I have written quite a number of short papers that were published in geological magazines and other publications; I have not counted them up recently, but I should say that they would amount to at least fifty.

Q. How much time have you spent altogether in studying the Yreka Mining district in this county?

A. The larger part of four years.

Q. I will ask you if you are familiar with the Ontario ore bodies and the ore bodies and veins in the Stewart Fraction property?

A. I am.

Q. Describe the ore bodies in the Ontario workings, their strike and dip?

997 A. In the Ontario mine there are three ore bodies that have——

Q. I am referring now to the Silver King tunnel level only?

A. Yes, I supposed you were. There are three ore bodies that have been mined and that are known respectively as the Gray, the May and the Frank. The Gray portion has a length on the Silver King tunnel level of about 320 feet. The course is about north 30

east. This ore body toward the east becomes very thin, at the most easternmost exposure of that level it has not been mined, it is far below a commercial grade, but further west stopes have been carried up on that ore body at an average angle of probably fortt-five degrees. That ore body was found cut off toward the southwest by a fault whose course is northerly and southerly and dip westerly from twenty to twenty-five degrees. Beyond that fault the May ore body was found by cross cutting to the right, by treating the fault as a normal fault, and crosscutting to the right. That ore body has been stoped to a small extent and in carrying the stopes up on that ore body it was found that the throw of that fault became less or at any rate the Gray and the May ore bodies came together so that the fault probably has no importance higher up. That ore
998 body was found cut off on the southwest by another fault whose course is about north 40 west and dip southwesterly about 35 degrees. By crosscutting to the right after passing that fault, that is, by treating that fault as a normal fault, the Frank ore body was found. The Frank ore body has been driven on for several hundred feet, I don't remember the exact distance. The course of it is about north forty degrees east, and stopes have been carried up on that ore body at an average angle of probably fifty degrees, that is, these stopes have been carried up in a northwesterly direction, making the dip probably degrees toward the southeast.

Q. I ask you just right there one question. On plaintiff's exhibit 1 you notice a drift which is named the Frank drift, which extends southerly on the Ontario south side line into Bunker Hill ground, the Silver Casket. I will ask you if the face of that drift is still in ore?

A. Yes, sir, the vein is exposed at the face of that drift, and there is very fair ore there.

Q. That is commercial ore, is it not?

A. Yes, sir.

999 Q. I will ask you if you have ever had occasion to study the works of the Stewart mine?

A. I have.

Q. And the veins in there?

A. I have.

Q. What is the course of the Stewart vein?

A. The average strike, the general course of the Senator Stewart vein lies between north 30 east and north 40 east.

Q. I will ask you what the general downward course of the Stewart vein is?

A. You refer to the general dip?

Q. General dip, yes, average dip?

A. The general dip is southeasterly. It would be at a right angle to the course that I have given as the general course of the vein.

Q. Where is the top or apex of the ore bodies in the Ontario claim above the Silver King tunnel level?

A. I am unable to give a very definite answer to that question, because I do not believe that the portion of the apex corresponding

to those ore bodies is exposed. It would be found, however, by going up on the dip in a northwesterly direction; it would
1000 probably lie partly under the Senator Stewart claim, perhaps a part under the Silver Casket.

Q. I will ask you what the course of the Stewart vein below the Clancy fault is, approximately?

A. Do you mean immediately below the Clancy fault?

Q. Yes, I mean on the old Senator Stewart tunnel level, or old Stewart tunnel level?

A. That would be about north forty east.

Q. Have you ever examined the upper works in the Stewart mine?

A. I have.

Q. What is disclosed in those upper works?

A. In the upper Stewart tunnel the vein which I believe to represent the Senator Stewart vein cuts at a point about 175 feet from the mouth of the tunnel. The vein there is very thin, as there is only a few inches of quartz; there is some oxidized lead minerals, has a small gouge, and dips southeastward about 65 degrees; thence the upper Stewart tunnel is in the end of that crosscut until a point near survey station L5434.

Q. Just take a pointer and point them out on the model also.

1001 A. From about the point which I have mentioned a drift is extended in a northeasterly or rather more northerly direction and for several hundred feet, and the vein is exposed in that drift which I believe a portion of the Senator Stewart vein because of its couse, its dip to the southeastward, and its general character. The model shows red indicating the extension of that vein in a southerly direction to where it is cut off by a fault which has been referred to in this case as the Ontario fault; also referred to by Dr. Lawson as the lower Cate fault. That portion of the vein is not very well exposed at the present day but in the past four years the timbers at times have not been—that is, ground has caved, the timbers have caved away and exposed pieces of that vein along that line.

Q. I will ask you if you have examined the end of the Stewart vein which lies against the Osborne fault, what is called the Osborne fault which has been referred to as the Osborne fault here?

A. I have.

Q. I will ask you if that end of the vein in your opinion constitutes a part of the top or apex on a vein?

1002 A. It does not; it is part of the bottom edge of the vein.

Q. You prepared a cross section. Is this your cross section?

A. Yes, sir.

Q. I will have this marked as an exhibit.

The said cross section was thereupon marked Defendant's Exhibit "M" for identification.

Q. I will hand you exhibit "M" for identification and ask you

to put it up there on the wall. I will ask who prepared that cross section?

A. The cross section was prepared under my direction.

Q. What does it purport to represent?

A. The red line is to represent the Senator Stewart vein.

Q. Through what lines upon the map defendant's exhibit "B," I believe it is, is that taken?

A. The section is drawn through the line 1-1 prime in exhibit "B," in a course about, or I believe exactly south 50 east, being the direction of the general dip of the vein.

1003 Q. I will ask you if that cross section is correct so far as you are able to make it?

A. It is.

Mr. FOLSOM: I will offer that in evidence and ask that it be admitted as defendant's exhibit "M."

The COURT: It will be admitted.

Thereupon the said cross section was received in evidence and marked Defendant's Exhibit "M."

Mr. FOLSOM:

Q. Will you indicate on the model that of that cross section as nearly as you can.

A. The line of that cross section passes through the northeasterly edge of the vein on the 300 foot level, and through the Siligo tunnel a short distance west of the crosscut.

Q. I will ask you what the blue on the cross section is supposed to represent?

A. The upper blue line represents the Clancy fault. The blue line which connects D-5 E, or, rather, I should say the lower Stewart tunnel level with the lower end of the section, represents the fault which cuts off the vein on the northeast, the fault that has

1004 been referred to in this case as the Osborne fault.

Q. What is the dotted blue line?

A. The dotted blue line indicates a supposed extension of the fault toward the northwest.

Q. What is the red or pink—I may be color blind?

A. This color?

Q. Yes, what is that supposed to represent?

A. That represents the vein.

Mr. FOLSOM: Take the witness.

Cross-examination.

By Mr. GUNN:

Q. Mr. Hershey, what do you understand by the apex of a vein?

A. By the apex of a vein I understand the top edge of the vein.

Q. Top edge of a vein?

A. Yes, sir.

Q. What do you understand by strike?

A. By strike I understand the course of the vein on a horizontal line at any given point.

Q. And what do you understand by dip?

1005 A. By dip I understand the inclination of the vein on a vertical plane drawn at a right angle to the strike.

Q. Could you put a sheet of paper on the board there and draw a diagram by which you can illustrate the top edge of a vein, the apex and dip and strike?

A. I wish to draw a circle, although it probably won't be an exact circle; it is near enough for the purpose of illustration. Through that circle I will draw a horizontal line which is supposed to divide that line into two equal portions, an upper portion and a lower portion. Now, if that circle represented a vein, the top edge of that vein would be all portions of it along the line A, B and C. The horizontal line indicates the strike of the vein, the general strike of the vein.

Q. And the dip would be at right angles to the strike?

A. Yes, sir, the dip would be indicated by a perpendicular line drawn from the center of the horizontal line to the center of the lower segment of the circle.

Q. You have examined the workings quite thoroughly in the Senator Stewart Fraction claim?

A. Yes, sir.

Q. And are familiar with what is shown in those work-

1006 ings?

A. Yes, sir; I am as far as they are accessible today or have been accessible to me within the last four years.

Q. Referring to the defendant's exhibit "B" I will ask you if the vein is disclosed in this working marked on this map D 5 W and D 5 east?

A. It was disclosed there at the time that I passed through those workings several years ago.

Q. Does the working follow the course of the vein?

A. I remember the D 5 west from the crosscut to near the point where a crosscut turns to the right from the end of the D 5 west drift that the vein was exposed continuously.

Q. How about the extension in the other direction from this Deering crosscut through the drift marked D 5 east?

A. I believe I should modify my answer in which I stated that I had been through all of those workings for there is a section there that I never was through. I was a short distance east of the crosscut. I don't remember just how far. The vein was still exposed in

1007 the face at the time I was there.

Q. Have you recently been in the drift which extends out in an easterly direction to its face?

A. I have been in the drift from a point probably 20 or 30 feet west from survey station L 6353 to the extreme eastern end of the drift.

Q. Is that drift for that distance along the vein or in the vein?

A. There is a little uncertainty in my mind as to how far the vein extends there. The vein usually consists of a fissure proper, a vein proper, which consists largely of galena and quartz that is deposited in an open fissure, I do not mean to say that the fissure remained up

to a width of several feet at any one time, but there was probably a continual opening of that fissure and the deposition of quartz and galena at the same time, so that we have nearly every place in the vein a true fissure vein, and outside of that in a zone that may be thirty or forty feet wide, perhaps a little wider in places, there is more or less galena, and it seemed not continuous, but scattered through a brecciated mass of quartzite, and it seems there is also considerable replacement quartzite within that zone. I do not doubt that
1008 a thousand thin specimens might be taken from the vein in places that would show replacement by the galena, but the most prominent feature about the vein is that central streak of quartz and galena which represents the original fissure. Now, that original streak, I should say may terminate near station L 5361, but over that streak there may be, although, the width of it is not exposed at that point there may be a considerable width of mineralized quartzite which properly belongs to the vein. Now, the hanging wall side of that is not exposed at that point at the present time and never has been as far as I know, and I am unable to say how far easterly along that drift the hanging wall portion of the vein may extend, so I cannot say just where the vein is entirely cut off by the fault. My impression is that the hanging wall side of it may extend as far as the top of raise 218 east and possibly a little farther.

Q. And for the distance that it does extend this working would be along the general course of the vein?

A. No, the portion we have been discussing last is along an abnormally bent portion of the vein, a portion that has been bent by the action of the forces which produced the fault. I should
1009 not call that the general course of the vein by any means.

Q. But for the distance that this working is shown in the direction of my pencil it is along the course of the vein abnormally bent as you have described?

A. I would not like to say that, because I have said the hanging wall side of the vein is not exposed along there and that drift may be going obliquely through the vein as far as I know.

Q. Now, take upon levels below the one we are discussing, and I will ask you if the vein is disclosed in that level?

1010 Q. The 100 level?

A. It is, but I am unable to give the exact distance or the exact points between which it is exposed. Several years ago I went down raise 109 east and found the vein extending continuously along that raise and stopes being carried out both sides of the raise, and I went down to the level, to the drift 105 east, and I went northeasterly and southwesterly along that drift, and my impression was that the vein was not absolutely continuously exposed, but it was exposed at so many points that it was evident the drift was practically following the vein. That is, I should say that it would be in drift No. 105 west for some distance from a crosscut which leads to the Stewart shaft No. 1, and in going in that direction the vein became very thin and became badly broken up by little faults, and finally it could not be followed any further.

Q. Is the level beneath the surface of the Senator Stewart Fraction claim along the general course of the vein?

A. Do you refer to the entire level or a portion of the level.

Q. I am speaking of the level below the surface of the Senator Stewart Fraction claim which is below the vein?

1011 A. No, a large part of it is in the abnormal bend abnormally bent up portion along the fault.

Q. And it follows the general course of the abnormal condition of the vein caused by the bend, does it not?

A. The eastern portion of it?

Q. The northeastern portion.

A. You mean the general course of the bent portion?

Q. Yes.

A. I suppose it does; I have not been through all of that.

Q. And is the vein exposed in the face of that drift?

A. I have not been able to get to the face of drift No. 105 east, because from the raise No. 218 east the drift is caved on both sides, and I have not been able to get out of that raise.

Q. And so you are not able to locate definitely the termination of the vein in that drift?

A. No, sir, I am not. There is galena in the vicinity of the raise, but I don't know whether it extends any further east or not.

Q. Now, the next level, the 200 foot level, is it on the vein; does it follow the general course of the vein below the surface of the

1012 Senator Stewart Fraction?

A. I don't believe I exactly understand your question. I gave the general course of the vein as between north 30 east and north 40 east. Do you mean to ask me whether that portion of the 200 level which is under the surface of the Senator Stewart Fraction claim conforms with the general course that I gave?

Q. No, I am not asking you that at all. We have on this map what purports to be a picture of that 200 level, have we not?

A. Yes.

Q. What I ask you is whether or not that portion of the level shown in the picture as being below the surface of the Senator Stewart Fraction claim is, as you have observed it, along the general course of the vein to the extent mentioned?

A. You mean whether it follows the vein in a general way?

Q. Yes.

A. Well, I understand that now. Yes, it follows the vein in a general way.

Q. And is the same true with reference to the 300 foot

1013 level as far as the Senator Stewart Fraction is concerned?

A. Yes, it is.

Q. Now, you are familiar with what is referred to on your Exhibit B as the Siligo tunnel?

A. I am.

Q. What is exposed and shown in that Siligo tunnel?

A. Near the southwestern end of the Siligo tunnel there is a gouge exposed which has been referred to in this case as the Clancy

fault, and I believe it represents the Clancy fault. Northeastward from that gouge there is a series of small gouges extending along the tunnel, and of these gouges the upper one appears to me to have a position which makes it practically the footwall of the vein in that tunnel; that is to say, all the galena that I observed and all the lead minerals of any kind that I observed were about that gouge. Now that gouge lies on the highest part of the southerly side of the drift, and appears in the wall near the roof, and in the crosscut which leads southerly from 5082 the gouge is probably three or four feet; that is, at the floor of the crosscut it is probably three or four feet from the drift. That gouge appears to go out into the main drift, and be cut off by a stronger fault gouge near the point L. 5428.

1014 Q. And where is L. 5428 located with reference to the point marked W prime on Plaintiff's Exhibit 1?

A. It is located near survey station 2502, at this point.

Q. Then, do I understand you to say that there is a vein exposed along this working referred to on Plaintiff's Exhibit 1 as the apex drift?

A. No, I say that a gouge that appears to me to represent the footwall of the vein is exposed at a number of places near the route along that drift in such a way as to indicate that the drift in general is under the vein, but the vein is exposed in a few places along the drift.

Q. What is exposed in the upraise from that drift?

A. In the upraise from that drift the gouge as I have described as probably constituting the footwall of the vein, appears to go into the route of the raise from one side or from the bottom of the raise, and beyond that the raise is following a gouge that represents a small fault, a fault perhaps of comparatively small value, of not much structural importance, which is distinctly under the vein.

Q. Is there any evidence of stoping in the immediate vicinity below that apex drift?

1015 A. There is.

Q. What evidence do you find there?

A. One can go down a raise from about station L. 5232 on Defendant's Exhibit B, into the stopes.

Q. Well, where is the apex of that section of the vein with reference to this Siligo tunnel or the apex drift as it is called on Plaintiff's Exhibit 1?

A. I don't know; I don't know that the apex is exposed there.

Q. Is the apex exposed in the raise?

A. I am not prepared to say that there is an apex there at all exposed; I suppose there is for a short distance what might be considered a portion of the vein, but I am not prepared to state positively.

Q. If the vein extends up through the stoping immediately below this Siligo tunnel, and the raise extends to the surface, the apex of that vein must be somewhere between the surface and the stopes, must it not?

A. Well, my difficulty arises from the fact of not having been

able to follow the vein up to the bottom of the surface debris, I do not know but that it may be cut off by a fault before it reaches that point and there may be a portion of the vein on the
1016 north side of that fault, so situated that it would make it impossible for any portion of the true apex of the vein to be extended to the Siligo tunnel. I am willing to concede that it is probable that there is a portion of the apex of the vein in the vicinity of the Siligo tunnel, but I don't want to be put in the position of having committed myself, because I don't know.

Q. Will you indicate on that map where, in your opinion, that apex would extend as shown by those workings?

A. What apex?

Q. The apex that you say you believe is in the apex drift and in the raise above it.

A. I think it might have a position somewhat as indicated by the position of the blue line XY on Defendant's Exhibit B, but I do not commit myself; I do not say it is there, but I say it is probably there.

Q. Now, in taking the dip of the vein, you say you take it at right angles to the strike?

A. At right angles to the strike, yes.

Q. As near as possible?

A. Exactly at right angles to the strike. Anything that varies from right angles to the strike is not the dip of the vein.

1017 Q. Will you indicate by your pencil the dip of this vein from this apex that you have drawn through those workings?

A. You refer to the local dip at that particular point?

Q. Yes, through this section here, within the Senator Stewart Fraction claim.

A. Without regard to the general dip of the vein?

Q. Without regard to the general dip of the vein; just take the true dip from this apex as disclosed?

A. I should not like to use the term "true dip" there. The term "true dip" is generally applied to the dip of the vein in general. I am willing to give the direction of the local dip of that particular point of that abnormal bent portion of the vein.

Q. What would be the dip as you would mark it on that map; take it from your point here, the most easterly portion of the apex?

A. I have marked it with an arrow pointing south.

Mr. GUNN: Will counsel object to my drawing a line through there?

Mr. FOLSOM: Why not make it on your own map?

1018 Mr. GUNN: Very well. I will make it on our own map.

Q. Will you mark a line on Plaintiff's Exhibit 1 in the course of the dip you have given, and then draw a line through these workings?

A. Now, in drawing that line, so as not to be misunderstood, I would like to make an explanation, and I would like to draw a sketch.

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Q. Mark it "line drawn by Mr. Hershey" so that we can identify it?

A. Line A. B. I would like to make an explanation in regard to that line in the form of a sketch.

Mr. DINES: I submit, your honor, that it is not a question of explanation.

Mr. FOLSOM: It does require explanation.

Mr. DINES: I don't think the witness has a right on every line he draws in reply to a question of that kind, to explain. It is on some questions that he cannot answer yes or no that he has a right to explain, and we wish to raise that question. If they wish that in rebuttal, they can get it.

The COURT: I will sustain the objection. I don't think that answer requires an explanation, a mathematical line. If you desire it in rebuttal, you can have it.

1019 Q. Now, you have drawn a cross section here, Mr. Hershey, which I understand is taken through the line shown on this map as 1-1 prime?

A. Yes.

Q. Where is the termination on the edge of the vein on the 200 foot level shown with reference to your cross section 1-1 prime, as you have observed it in the ground?

A. It is about 30 feet northeast of the line of section.

Q. And where is it exposed in this working?

A. Do you speak of the end of the vein, the bottom end of the vein?

Q. The edge of the vein where it is cut off by the fault?

A. The *dege* of the vein where it is cut off by the fault is about 10 feet easterly from survey station L-5395 on Defendant's Exhibit B?

Q. Will you put a little dot on the map at that point?

A. Yes.

Q. Where next is the edge of the vein exposed as you pass northwesterly?

1020 A. I am not certain that it is exposed anywhere northwesterly from that point; that is, the absolute extreme limit of the vein in a northeast direction.

Q. Where is the limit of the vein material or ore that you have seen exposed in the northwesterly direction from the point which you have designated?

A. On the 100 foot level the most northeasterly ore that I have seen was in raise 218 east. On the Stewart tunnel level the most northeasterly commercial ore that I have seen is about midway between stations L5361 and L5362, but I have seen along the right hand wall of that drift as far as the top 218 east, and in the upper side of that raise—I have seen material which is more or less broken quartzite and a great deal of limonite, and a little qu*a*rtz, which I think probably is a little portion of the hanging or upper side of the vein.

Q. Now, what is the general course of the line of the edge of the

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vein as it comes against the fault from the lower Stewart level down to the 300?

A. I am unable to give you that line definitely, as I could not select the point on the lower Stewart tunnel level from which to determine that line. I can select a point there, being the
1021 most easterly point at which I have seen anything that appears to me to be vein matter.

Q. Very well, take that point then. I understand that you do not say that that would be the termination of the vein, but that it is the most easterly point that you have observed——

A. Observed vein matter, that is, what I think probably is vein matter: it is highly oxidized, and there is no galena present in it.

Q. Yes——

A. It would be substantially north 50 west.

Q. Will you just put a line on this map, Plaintiff's Exhibit 1, a blue line extending through approximately the point that you have designated, and showing the course?

Mr. FOLSOM: The course of the vein at that point?

Mr. GUNN: The course of the edge of the fault as he has observed it.

Q. Just draw the line and mark it?

A. The line CD. On Plaintiff's Exhibit No. 1 the blue line indicated by the blue letters C and D is a line connecting the point on the lower Stewart tunnel level which is the most easterly point at which I have seen what I consider probably vein matter, the portion of the hanging wall section of the vein, but not necessarily the absolute limit of the vein on that level—with a point on the
1022 200 foot level which is the most northeasterly point at which I have seen what I would identify as a portion of the Senator Stewart vein.

Q. And what is the course of that line that you have taken?

A. The course is about north 50 west.

Q. Now, I notice that you refer to what you call the abnormal condition of the vein as shown in these most northeasterly workings?

A. Yes.

Q. A bending up of the vein as you term it, is it not?

A. Well, yes; I have referred to it as a bending up, but whether the actual movement was in an upward direction, or merely in a direction to the right I am unable to say, but the general effect of it would be the same as if it were bent up, the vein.

Q. Just step over to the model a moment. If you should assume that this vein laid up along the line of the fault until the edge of the vein was on a level with the apex that you have described in the Siligo tunnel, would you call this edge an apex?

1023 A. I don't believe that I quite understand your question.

Q. Let us assume that the vein extends up along the fault and lies along the fault, and that the *de*ge of the vein is on a level with the top or apex of the vein as shown in the Siligo tunnel, would you call this edge of the vein extended and projected as you have projected it, the apex of the vein?

A. You mean that the edge between, say, a point on the Fir tun-

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nel level, and one on the Lower Stewart tunnel level, if it be projected up along the fault in a direct line to the point where it reaches the Siligo tunnel level?

Q. Let us assume that there is a vein extending up from this edge that you have described along the fault, and that the edge of that vein does lie against that fault in a horizontal plane with the apex of the vein in the Siligo tunnel, would you call that edge of the vein an apex?

Mr. FOLSOM: If you confine your question to his opinion as a geologist, and not as a matter of law, we will not object.

Mr. GUNN: I am confining it to his understanding of an apex.

Mr. FOLSOM: That is all right.

1024 A. The portion of that edge that you have on the level of the Siligo tunnel I would consider apex, provided that the line is to be determined by the fault, and that you could not find another piece of the vein beyond the fault, which piece might form a true apex which would prevent this from being the apex.

Q. We are assuming that that is the edge of the vein. The vein is projected so that the absolute edge of the vein is on a plane horizontal with the top of the vein as exposed in the Siligo tunnel, and I am asking you whether that edge you would call an apex?

A. Well, it would depend largely on the angle that your edge would make with the general course of the vein.

Q. Let us assume that the surface is eroded down to the plane of the apex drift or Siligo tunnel, and let us assume that there is a vein lying along this line of the fault, outcropping at the surface to the easterly end line of the Senator Stewart Fraction claim; would you call that outcrop the apex of a vein?

A. Yes, if it had a course which would not make an angle of less than 90 degrees with the general course of the vein, I would call it a portion of the top or apex of the vein.

1025 Q. What does the general course of the vein have to do with the question of its being apex or not apex?

A. I would like to illustrate that by making a sketch.

Q. Well, I will withdraw the question for the present, till we get through over here.

A. Well, I would like to make that explanation now.

Q. But I have withdrawn the question and I will give you permission to answer it later. So you say that if the conditions exist which I have supposed, this outcrop would be an apex?

A. If that outcrop would make an angle of less than 90 degrees with the general strike of the vein, I believe it would be a portion of the apex.

Mr. FOLSOM:

Q. Do you say less than an angle of 90 degrees w*w*ith its course?

A. The angle between the general strike of the vein and this portion that we have of the vein projected up along the fault.

Mr. GUNN:

Q. Let us take this projection now that we have made on a plane

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with the Siligo tunnel or the apex exposed in that tunnel,
1026 and we will project it along the plane of this fault. What would be the strike of that vein along that apex and below the apex?

A. The local strike along the portion that you have projected up along the fault would be the same as the strike of the fault.

Q. And the dip would be at right angles to the strike?

A. At right angles to the strike at that point, the dip is invariably at right angles to the strike.

Q. And would not the strike alike of the apex and below the apex and the dip from the apex determine whether that is an apex or not?

Mr. FOLSOM: I object to that as calling for a conclusion of law?

A. I would like to draw a sketch of that.

Mr. FOLSOM: I object to that as being a question of law. If you ask the opinion of the witness as a geologist as to what it would consti-tute geologically, we have no objection, but not as to what constitutes it legally?

Mr. GUNN: He has used it with reference to this case.

Mr. FOLSOM: No, sir. You supposed a hypothetical case. You have drawn the apex the same as what you call the Clancy fault apex, and not in accordance with the actual facts. Do you
1027 ask him as a geologist?

A. I asked him as he himself used the term apex in this case.

(Objection overruled. Defendant- excepted.)

A. In answering that question I would like to draw a sketch to make my answer clear.

Q. Well, you can answer the question, and then explain by a sketch if you desire.

The COURT: Answer the question, and then you can explain.

A. I don't believe that the local strike and dip of that portion of the vein that would be projected along the fault, in view of the fact that the vein extends a very great distance away from the fault, would necessarily make that portion an apex, and I would like to draw a sketch to explain my idea of an apex.

Now, if we suppose this sheet of paper, which stands at an inclination of probably 70 or 75 degrees, to represent a vein, the upper edge, the edge nearest the ceiling would unquestionably be the top or apex of the vein.

Q. Yes.

A. Now, if we cut off a strip along the right side of the
1028 paper along a line which I have indicated by a blue line which I have marked A-B, I believe that the portion along that line would be a portion of the apex of the vein for the same reason I believe that if we cut off another portion of the paper along the line B-C, that that line would represent a portion of the bottom edge of the vein.

Q. Just to make it plain, Mr. Hershey, may I suggest that you put on the course of the strike of the vein and the dip, by lines?

A. The strike of the vein is indicated by the lines D-E which is

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supposed to be horizontal, that is, parallel to the upper edge of the paper.

(Sketch by Mr. Hershey referred to is marked Defendants' Exhibit "N," for identification.)

Q. Rferring to this Exhibit N——
A. I haven't finished my explanation.
Q. Very well.
A. The line F-G on Defendants' Exhibit N is supposed to be, and was intended to be at right angles to the line D-E, and to represent the general dip of the vein. D-E represents the general
1029 course or strike. Now, I have cut off a *a* portion of this paper along the line B-C.
Mr. DINES: Can't we imagine it to be cut off.
WITNESS: I prefer to cut it off. Now, I have cut off the paper along a line which is just outside of the line B-C, leaving the line on the paper, and if the vein were not bent up along the fault it would have a position very similar to this. That portion which would be cut off by the fault would distinctly undercut from B to C; that is to say, it would make an angle of less than 90 degress to the general strike of the vein. But owing to the influence of the fault, the portion of the vein which is represented by the portion of the paper B-C has been bent up a little. Now, that bending does not appear to me to constitute that edge any portion of the upper edge or apex of the vein; it still remains a portion of the bottom edge of the vein.
Q. Now, you have taken into consideration the entire vein disclosed by these workings, have you not?
A. I have.
Q. Now, let us step over here to the model a moment and let us take the projection of the vein that I asked you about a moment ago, along the line of the fault up to a horizontal plane on a
1030 level with the apex drift. We will assume that, and we will assume that the vein is cut off or faulted at a distance, we will say, of 250 feet from the line of cutoff as shown on this model. This we know nothing about, for it is gone. Would then this edge along the plane of the Siligo tunnel be the apex of that section of the vein?

Mr. GRAY: Which way from the Siligo tunnel, over here toward the Clancy fault or the other way?
Mr. GUNN: I think the witness understands.
Mr. GRAY: Well, I don't understand.
WITNESS: I think I understand.
The COURT: Just let the question be read, if Mr. Gray is uncertain. I think I understand the question.
(Question read.)

A. In order to answer that question I would like to draw another sketch.
Q. You can answer it yes or no, and then you can explain if you care to.

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A. I don't think it would. I would like to make an explanation of that in a sketch.

Mr. DINES: It seems to me that the witness can answer questions without illustrating everything by a sketch. I am not fa-
1031 maliar with your honor's practice, but I think that is improper on cross-examination. Some of them we have not objected to, of course.

The COURT: Well, my practice has never been along the lines of this case. I have never had a case exactly like this. This is a very peculiar case, and it has been illustrated profusely on the other side, and I think I shall allow it to be illustrated by this side. It is an unknown field to me, as far as practice is concerned.

Mr. DINES: My objection was not as to their right to illustrate, but as to the order of the introduction of the illustration.

The COURT: Well, we will allow it in this case.

A. Now, I have a new sheet of paper on the board, standing at an angle of probably 70 or 75 degrees, and I will draw a horizontal line to indicate the general strike of the vein.

(Sketch of Mr. Hershey marked Defendants' Exhibit "O," for identification.)

WITNESS (continuing): The line A-B on Defendants' Exhibit O represents the general strike or general course of the vein. Now,
I draw a line from B to a point C, which line makes an angle
1032 of less than 90 degrees with the line A-B. I will cut off the paper along that line, then I will bend up the edge near the line B-C to represent the actual conditions as we find them in the ground.

Q. Well, but my question——

A. Now, I will cut off a strip——

Mr. FOLSOM: Let him go ahead.

A. —to represent the section 200 feet in width.

Q. 200 feet away from the line of cutoff or the present edge of the vein?

A. Yes, and I will double this strip back along the portion of the line A-B that I have cut off. This strip is probably three inches wide, and I am now holding it at approximately the position which it has in the ground, and it looks to me like a chimney of ore, rather than a vein, and the upper end of it appears to be at B.

Q. Whatever it may be, where is the top of that chimney of ore or vein?

A. If it is a chimney of ore, as it appears to me——

Q. We will call it a vein; we will assume that it is a vein?

A. I don't know that I am willing to assume that that is
1033 a vein.

Q. Well, I ask you to assume that it is a vein.

The COURT: Yes, assume it to be a vein according to the question.

Mr. FOLSOM: The question is, where is the top?

A. Assuming it to be a vein, a portion of the top is represented

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by the line B-C. Of course it has been detached from the remainder *of the vein, consequently it has no direct bearing on the case.*

Q. I will ask you if, according to your own definition, the line B-C would not be the top edge of that vein?

Mr. GRAY: Held the way you hold it or the way he held it. You hold it differently from the way he did.

Q. Well, we will put it in the model here. We are carrying it up this way.

A. That is not the position it occupies in the ground.

Q. Well, I am taking an assumed shape of a vein, and we carry it up along the fault, and I am asking you, assuming that the top of that vein is on a horizontal plane with the apex drift or the apex disclosed in the drift, and that this vein is cut off at a distance of 200 feet, we will say, away from the present line of termination against the Osborne fault, and I will ask you now if that edge on a level with the apex drift would be the top or apex according to your understanding of an apex?

1034

A. Yes, in the that case, which is not at all analogous to the case which is being tried here. This seems to be entirely a supposition case. In that case it would be a portion of the apex.

Q. Now, at what point would this have to be cut off in order to make this line which you have described as the top, the side or the bottom of that vein; point out here if you will?

A. I cannot point it out on that model; I wish to refer to the sketch, Plaintiff's Exhibit N. In the manner in which you held that paper it appeared to me that the line A-B would represent a similar position——

Q. Just a moment. I will ask you to just draw a line there representing the apex drift and the apex of the vein in the drift on defendants' exhibit "D"?

1035

A. In the first place, you are assuming an apex which I do not know exists. I am willing to concede that it probably exists.

Q. Yes, you concede that it exists.

A. As drawn on exhibit "O" the line "XY" may be taken to be the abnormal bend of the portion of the vein in the Siligo tunnel level near the point where it is cut off by the so-called Osborne fault.

Q. Draw a line approximately six hundred feet long on a horizontal plane with the assumed point of apex in that drift?

A. A horizontal line?

Q. A horizontal line.

A. The line "YZ" may be taken to be such horizontal line.

Q. Now, we are assuming that the line "YZ" is the edge of the vein carried up along the Osborne fault to a horizontal plane with the apex in the Siligo tunnel?

A. The line "YZ"?

Q. Yes, sir.

1036

A. It cannot be. It makes more than a right angle with that line. Oh, I see now.

Q. Doesn't it represent that plane?

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A. Yes, sir, I see. It cannot be the line because it makes too small an angle with the line "XY."

Q. It is approximately correct?

A. Not even approximately correct.

Q. I wish you would draw then, in your own way, a line representing the edge of that vein carried up on a projection along the Osborne fault, to a plane, a horizontal plane, on the same plane as the apex drift?

Mr. GRAY: I do not understand the question. I object to it for that reason.

The WITNESS: I do not either.

Mr. GRAY: And nobody else can. I object to the question on the ground it is absolutely unintelligible.

Mr. GUNN: Read the question.

(Question read.)

Mr. GRAY: It is impossible to conceive the vein should ever have taken any such position along the Osborn fault when as a matter of fact it is squarely cut off by a fault.

The COURT: This is cross examination, and the idea is
1037 to illustrate by this witness.

Mr. GRAY: It is illustrating by doing something impossible.

The WITNESS: I believe I understand the question.

The COURT: Objection overruled.

A. I think if the line "YZ" were drawn—well, being purely a supposititious case, it would stand as it is.

Mr. GUNN:

Q. Now, where would that section of the vein have to be cut in order to make a side edge?

A. In order to make a side edge it would have to be cut at a right angle to the general strike of the vein.

Q. We are assuming the general strike as is shown upon that. Just draw a line through at right angles where it would have to be cut to make a side edge?

A. It does not appear to me that the general strike of the vein can be determined from that sketch because the line "XY" and the line "YZ," those lines are supposed to be horizontal, aren't they?

Q. Yes, sir.

A. I will modify my answer. Supposing the lines "XY" and the lines "YZ" on defendants' exhibit "O" to represent a horizontal section through a vein, the line "XZ" would be the general
1038 course of the vein?

Q. Very well. Now, what would be the dip?

A. The dip would be at a right angle to that course, and it is indicated on the sketch by an arrow labeled "dip."

Q. And is it not true that the vein would have to be cut down the line of that dip in order to get a side edge?

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A. Yes, sir, it is, because if cut on any other line it would either be an upper edge or a lower edge.

Q. Where you have a side edge of a vein at any point along that edge that you depart along the vein on the strike of the vein you are going at right angles, are you not, to the edge?

A. If you depart along the general strike, yes, sir, you are going at right angles to the edge.

Q. Yes, and you would be going out on a horizontal plane?

A. Yes, sir.

Q. Step over here to this exhibit 1 and show me, take any point at which you have found the edge of that vein as you have stated, at which you can depart at right angles to the line as cut off
1039 and not pursue a downward course.

A. Your question, as I understand it, is that if I can show you any point along the line where the so-called Osborne fault cuts off the vein at which I can depart from that line at a right angle to that line, keep within the vein and not pursue a downward course?

Q. From the point of departure?

Mr. GRAY: This exhibit 3 you might use instead of using No. 1.

Mr. GUNN: All right. I am confining it here to the edge of the vein as you have observed it and marked it upon this map.

Mr. GRAY: It is marked more plainly.

Mr. DINES: We object to counsel for the defendant making suggestions; let him put it on exhibit 1, the one we are talking about.

The COURT: Let counsel pursue the examination in their own way, Mr. Gray.

A. Well, you have talked so much that I believe I will have to have the question read.

The COURT: Very well.

(Question read.)

1040 Mr. GUNN: I am asking him between the points that he has designated here, the points "C" and "D." That is where he says he has observed the line of cutoff.

Mr. FOLSOM: That is just a local——

Mr. GUNN: All right; taking that for illustration, I am asking him if there is any point between "C" and "D" that he can depart from the edge on a right angle to the line of cutoff as he has traced it upon this map without pursuing a downward course on the vein?

Mr. FOLSOM: With that explanation I have no objection.

A. No. I would like to make a little explanation in connection with that, that is, similar to the explanation made by Dr. Lawson the other day, and that is, if we assume a line "MN," a presumed horizontal line indicated on defendant's exhibit "O" to be the general strike of the vein, we draw a line below that labeled "HK," and suppose that line to be the line along which the vein terminates downward, one can go from a given point on that line, for instance, at the point indicated by the letter "R," on a downward course to some other point within that vein, in other words, we can go from some point on the bottom of the vein on a downward course to some other
1041 point within the vein without getting out of the vein.

Q. And when you go on a downward course from the bot-

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tom of the vein, if you go at right angles to your line of cutoff, you go upward instead of downward, do you not, every time?

A. I do not understand that question.

Mr. GRAY: Read the question.

(Question read.)

Mr. GUNN: I withdraw that question and I will ask another one. I will ask you to put a strike and dip on that piece of paper. Mark this for identification.

The paper was marked Defendant's Exhibit "P" for identification.

Q. I will ask you to draw a line which would represent the bottom edge of this vein on defendant's exhibit "P." You drew a diagram here a few minutes ago through what you called the bottom edge. Now, I understood you to say——

A. I would like to explain this sketch, if you please.

Q. All right.

A. On the sketch, defendant's exhibit "P" I have drawn a line "ABD" presumed to be horizontal and to indicate the general
1042 strike of a vein. I have drawn a line perpendicular to that, the line "CD," to represent the general dip of the vein. I have also drawn the line "EF" to represent an incline bottom to the vein.

Q. What you call a bottom edge?

A. What I call a bottom edge.

Q. And you have said that you can proceed from that bottom edge on a downward course on the vein, have you not?

A. Yes, sir, that is, not from all parts of that bottom edge but from any point higher than the point "E."

Q. Now, is there any point on that bottom edge that you can depart at right angles to your line of cutoff that you would not be pursuing a course upward?

A. No, there is not, and I am of the impression that I misunderstood your question in regard to departing at a right angle from the line along which the Osborne fault, the so-called Osborne fault, cuts off the vein. I thought I understood that question but I am rather inclined to believe that I did not. Presuming that line, the line represented by "CD" on plaintiff's exhibit 1, a line which is not necessarily the line along which the Osborne fault cuts off the
1043 vein, because I have not observed the exact point on the lower Stewart tunnel at which all part- of the vein are cut off by the Osborne fault, but presuming that that line does for the purpose of this illustration represent the line along which the vein is cut off by the so-called Osborne fault, that line has a course about north 50 west. If I would depart from that line at a right angle it would be on the line south 40 west; depart from any point on that line on a course south 40 west, I do not believe that I would go on an upward course within the vein.

Q. I am not asking you about an upward course.

A. On a downward course, I meant to say.

Q. Yes. I will ask you to start at any point in that line which you have marked as the line of cut-off and depart at right angles from

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that line of cutoff and follow the vein 200 feet, and state whether or not you would not be pursuing a downward course for that entire distance departing at right angles to the line of cutoff.

A. Yes, that is true so far as the short bent-up section along the fault is concerned; it is not true when you consider the vein as a whole; that refers to a very short portion of the vein along the fault.

Q. One more question. You have already said that in
1044 order to have a side edge you must have a cutoff parallel with the line of your dip; is that not correct?

A. Yes, sir.

Q. And at right angles to your strike?

A. Yes, sir.

Q. Then, is it not true that any line or cutoff that diverges from your line or dip as you go downward on the vein makes a top edge and not a side edge or bottom edge?

A. That is true.

Q. Now, just a moment.

Mr. FOLSOM: Wait a moment; he has not finished.

A. In connection with that I would like to explain to the court that my understanding is that Mr. Gunn's question referred to a line which on defendant's exhibit——

Q. I was not referring to any line——

A. (Continuing:) —"N" would be indicated by the line "AB."

Q. Yes, or you can draw a line on this exhibit "P"—let me draw a line. Now, I have drawn the line "XY" indicating a line of cutoff of a vein and as you go down on that line it diverges from the line of the true dip as shown by "CD," does it not?

1045 A. It does.

Q. And that being true, the edge presented by a line of cut off is the top edge and not the side or bottom edge?

A. It is the top edge of a portion of the vein as we understand veins.

Q. Yes. Assuming that the line "YT" is parallel to our true line of dip, the edge between "YT" would be a side edge, would it no-?

A. It would.

Q. And assuming that the line "TU" converges with the line of your dip as you go downward, the section between "T" and "U" would be a bottom edge, would it not?

A. It would.

Q. If we should go here to this map and take the section the section I just called your attention to, a section of this vein 200 feet away from this line of cutoff, and you say that for that distance there would be a downward course, as I understood you, passing at right angles to the line of cutoff?

A. I don't know just how far you would go on a downward course, but a short distance until finally you would begin practically along the strike of the vein.

1046 Q. Well, take a section here 200 feet from your line of cutoff and as to that section of the vein would this line of cutoff be a top edge?

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A. If you cut that section of the vein away and do not consider it at all in connection with the remainder of the vein, and if you define it as a vein, that edge would be a top edge.

Q. And in your statement that this is a side edge you take into consideration the entire course of this vein as shown through all of these workings?

A. I do.

Mr. GUNN: That is all.

Redirect examination.

By Mr. GRAY:

Q. Mr. Hershey, we have had a good deal of supposing by Mr. Gunn, and I am willing to carry one of his suppositions onto exhibit 3 and suppose that on a horizontal plane we could project the vein upward along the line of the Osborne fault until it came to an elevation on a horizontal plane at the same elevation as shown in the Siligo tunnel, where would that vein go upon exhibit "B"?

1047 A. It would go beyond the northeast side line of the Senator Stewart Fraction claim.

Q. Sure. So that if you indulge in the one assumption it shows that it would not affect this case any more than if you indulged in the other?

Mr. DINES: We object to that, your honor.

The COURT: The objection is sustained.

Mr. GRAY: I want to get this red apex and law it on the plan map. I think I could make the testimony a little more plain if we have it there. It will be here in a moment.

The COURT: All right.

Mr. GRAY: There is one question I might ask Mr. Hershey.

Q. I wish you would look at the model on the Stewart tunnel level and point out to the court where the footwall of the Stewart on the fir tunnel level approaches that vein along that level, to the end of the level, approaches most nearly to the Osborne fault, the footwall portion there; it would be the western portion as shown upon the model?

1048 A. I am not familiar with the position of the so-called Osborne fault in that vicinity, but I presume it would be in the vicinity of the end of that little crosscut, that is, a crosscut from near the foot of R 4 E.

Q. Tinted in gray?

A. Yes, sir.

Q. Reaching the blue celluloid?

A. Yes, sir.

Q. And how close to that point do you find the Stewart vein?

A. The nearest exposure of the Stewart vein to that point is probably thirty feet; probably forty feet.

Q. Yes, sir; and what is the course of that vein as disclosed from that point within thirty feet of this fault to the point where it is most developed in its most southerly face away over here near the south side line of the Senator Stewart claim?

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A. The general course of the vein between the two points indicated on the old Stewart tunnel leve- is about north 40 degrees east.

Q. And the one point is within about thirty feet of where the Osborne fault or this great fault is shown upon the model?

1049 A. Yes, sir.

Q. And that is just below the—it is from a point right near that point thirty feet from the Osborne fault where the raise extends upward to this Siligo tunnel?

A. Yes, sir.

Q. So far as the footwall portion of the vein or that opening upon the vein is concerned, any particular abnormal bending extends from that point over to the Osborne fault?

A. No, I rather think that the abnormal bending extends back as far as the foot of the R 4 E raise.

Q. Yes, sir; how many feet away from this point is the foot of that raise?

A. Probably thirty feet.

Q. And how far is the raise from the fault, approximately, as nearly as the model discloses it? I know there is no direct opening.

A. Take it at right angles to the workings, about fifty feet.

Q. Mr. Hershey, it has been shown in evidence by Mr. Clancy who has made careful surveys of these openings and have gone to all of the places, and I understand that there are some perhaps that you have not visited, that the course of the edge of the end of

1050 the vein as it is cut off by the Osborne fault from the highest point near the Siligo tunnel or in the Siligo tunnel to the point where it crosses the east end line of the Senator Stewart Fraction claim is south forty east or north forty west.

A. North 41 west.

Q. North 41 west; and the course of that edge of the end of the vein which is by the plaintiff called an apex has been testified by Mr. Greene as a course of north 45 west, a difference of four degrees.

A. If I remember rightly, yes.

Q. Taking it at the course of north 45—we will say 42 or 43, along in between the two—and extending a line a section at right angles to that course, what is the fact with reference to whether or not you follow on a level on an upward or a downward course as you pursue that line through the vein in its extension southwestward—any plane that you want to take there. If you want, I will be glad to project that so as to show the court; you might take the protractor and show the court how you go from the 300 to the 200 level

A. As I understand, your question involves going from the point along which the vein is cut off from the so-called Osborne

1051 fault to the extreme southwesterly edge of the vein so far as we know it, the greater portion of that course would unquestionably be on an upward course of the vein; it would be on a downward course for a very short distance near the line where the vein is cut off by the fault; beyond that it would be unquestionably on an upward course.

Q. In other words, let us just take some section here, I want to illustrate that to the court. Give me a protractor. I would like to lay this accurately along the line which Mr. Clancy has given of

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south 41 east. Now then, is this ruler laid on there, this straight edge, of approximately north 41 west.

A. About north 42 west.

Q. All right; that is close enough. Take another straight edge, will you please. Here is one, an iron one. Will you be good enough to lay that on the point where the 400 foot level comes against the line at right angles?

A. (Witness placed straight edge on map)

Q. A vertical section drawn through there passing along a line now at right angles from the point where the 400 level reaches that line—what is this green up here? Into what workings on
1052 your course southwesterly does that plane take you, keeping within the vein as nearly as you can?

A. It takes you up to the 300 foot level.

Q. Doesn't it take you any higher than that?

A. Not within the vein.

Q. Lay that up on the point where the 300 foot level comes against the—where with reference to the Gray drift does that line take you. I should have asked you with reference to the other; where did the other line take you with reference to that?

A. The other line took me to a considerable height above the Gray drift onto the 300 foot level.

Q. How about this one? You say the other took you to a considerable height above. How about the 300, taking a right angle from the point where the 300 level reaches this line of apex?

A. It takes me to a point considerably higher than any point of the Gray drift.

Q. Within the vein?

A. Yes; it is, practically disregarding the many crooks in the vein, it is practically following the strike of the vein.

1053 Q. Do you rise along that line in the vein as you go upwards, in other words?

A. Yes, sir, I do.

Mr. DINES: Your honor, we do not think he ought to lead his own witness.

The COURT: Yes, sir, I sustain the objection.

A. Yes, sir; you rise.

Mr. GRAY:

Q. Take up now to the 200. That is above any of the workings in the Ontario?

A. Yes, sir, it is.

Q. Take now the Stewart tunnel level at its most southerly, where the twist or turn caused by the fault is shown——

A. Mr. Gray, you do not keep that straight edge in the same position, and it affects——

Q. If you had to hold it here, you would understand why I cannot. I am trying to hold it as nearly along that line as I can.

A. What is the question.

Q. Start on a line from the point where the Stewart tunnel leve-

is extended along practically parallel with the fault and ex-
1054 tend that line on to the southwesterly, where do you come?

A. You come to a point near the southwesterly end of that level, but in going there you cross a fault, so that I think that that fault should be taken into account in that part of the section which involves the following of the vein.

Mr. GUNN: I do not understand the witness answered the question yet. You asked him if he passed upward or downward?

Mr. GRAY: I understood it, Mr. Gunn; you have a right to recross-examine if you did not understand it.

The WITNESS: His question involved keeping within the vein.

Mr. GRAY:

Q. Yes, sir; does that fault have anything to do with the course of the vein or with its dip?

A. It does; it affects the apparent course of the vein; it does not affect the true course of the vein.

Q. Does it affect the dip of the vein?

A. It does not affect the true dip, but it affects the apparent dip.

Q. That is the Deering fault?

A. Yes, sir.

1055 Q. Now, come up here to this point where we have found the vein on the Stewart tunnel level approximately 50 feet from the Osborne fault and lay your ruler at right angles to a course of north 41 west, approximately so.

A. This point?

Q. Say, at the foot of that raise (indicating). Following along such a plane there do you go upward or downward or on the level?

A. You go on an upward course.

Q. You would reach a point above the Clancy fault if you follow the line of that plane far enough to the southwest, wouldn't you?

A. You would.

Thereupon an adjournment was taken until 2:00 o'clock p. m. of this day, Tuesday, January 14, 1913.

1056 2 o'CLOCK p. m., TUESDAY, *January 14th*, 1913.

Mr. GRAY: If your honor please, when Mr. Hershey was testifying before lunch, he said that I moved that straight edge more or less—I was unable to hold it on the correct course on the map, and he would like to re-state briefly the effect of running planes at right angles to the alleged apex which is the end of the vein and marked in red upon Exhibit 3, for the purpose of showing what would be the result.

The COURT: He may correct his testimony in that regard.

Mr. GRAY:

Q. You can go to the map, and take what means you desire and show whether you would be going on a level or going upward or downward from the apex on planes drawn at right angles?

A. If planes were drawn through the vein at right angles to a line connecting a point in the Silligo tunnel where the vein is cut off by

the so called Osborne fault as indicated at point W on Plaintiff's Exhibit 3, of which this is a tracing, and one were to travel along those planes in a southwesterly direction, the net result would invariabl- be an upward course. Of course there would be for a short distance near the so called Osborne fault—there would be undoubtedly a downward course in that plane, but that downward course would soon be changed to an upward course and the net result
1057 of traveling along those planes would in all cases be an upward course in the vein.

Q. Taking a plane at right angles to the course of the alleged alex as testified to by Mr. Clancy as having a course north 41 west or south 41 east at the point where it crosses the east end line of the Senator Stewart Fraction claim where would that plane pass with reference to the ore bodies in the Ontario?

A. The plane would cut the vein at a considerable height above the ore bodies in the Ontario, that is, northwesterly from the other portion of the ore bodies in the Ontario mine.

Q. I call your attention on the model to the vein as disclosed some 900 feet on the Stewart tunnel level to a point which is but a short distance from the Osborne fault, which you pointed out to the court, between 30 and 50 feet from the Osborne fault—say 50 feet if you like at the bottom of raise No. 4 east. What is the course of the vein as disclosed there on that level from that point to its most southerly place where it is found?

A. About north 34 degrees east.

Q. And that is a distance of approximately 900 feet?

1058 A. In that neighborhood; it is just about 900 feet.

Q. What is called the Clancy fault, as I understood you heretofore to testify, is disclosed in this raise near the south side line of the Senator Stewart Fraction claim, and what has been called the Clancy fault is again seen in the Siligo tunnel. Approximately what is the course between those two points?

A. About north 40 degrees east.

Q. That has not been developed, as far as you have seen it, between those points, has it?

A. No, sir, I have not seen it between those points.

Q. These bodies of ore in the Ontario which have been developed, are how many hundred feet in a southerly direction from this end of the vein which has been called an apex by the plaintiff?

A. The nearest stoping in the Ontario mine is more than 600 feet southerly from the line along which the vein is cut off by the so-called Osborne fault.

Q. Now, without giving it exactly in degrees, just generally what is the relative strike of those ore bodies as disclosed throughout the workings in the Ontario with reference to the strike of this end of the vein painted in red by Mr. Clancy on Exhibit 3 and called
1059 an apex?

Mr. DINES: I don't think that is re-direct of anything brought out on the cross-examination. I don't think Mr. Gunn went into that.

Mr. GUNN: I did not go into that at all.

Mr. GRAY: You tried to keep him up close to the fault. I want to extend him out into the ground in controversy.

Mr. GUNN: I have no objection.

The COURT: You may go ahead. It is not properly re-direct, though.

A. Well, I gave the course of the Gray ore body as north 30 degrees east, and the course of the Frank ore body as north 40 degrees east, and the course of the line along which the vein is cut off by the so called Osborne fault as about north 41 west, that is taking the point where it passes under the easterly end line of the Senator Stewart Fraction claim to the point in the Siligo tunnel where the footwall of the vein apparently meets the so-called Osborne fault; that would give a course of north 41 west.

Q. What is the general course of the ore bodies in controversy here with respect to the alleged apex, the end of the vein which is called an apex at the fault?

1060 A. It would be less than 90 degrees; the angle between them would be considerably less than 90 degrees.

Q. That would be the angle in here?

A. No, it would be the angle between the line along which the vein is cut off by the so-called Osborne fault, projected toward the southeast, and the average line taken through the Ontario ore bodies, projected northeast—the angle between those two would be considerably less than 90 degrees.

Q. Now, Mr. Gunn had you mark some little points on the map between which, along this fault, there was a local course of that edge, which I understood you to give as approximately north 50 east?

A. North 50 west.

Q. North 50 west?

A. But I explained that I do not positively identify that line as the line along which the vein is cut off by the so-called Osborne fault; it is simply a line connecting the point on the lower Stewart tunnel, the most easterly point at which I believed I could see vein matter, with the point on the 200 foot level at which I believe I can see the point where the vein is cut off by the so-called Osborne fault.

1061 Q. That is of course simply along there in that local territory that you have referred to?

A. Yes, it is.

Recross-examination.

By Mr. GUNN:

Q. Mr. Hershey, if I understood you correctly, you stated that if the vein should be projected along the Osborne fault to a horizontal plane coincident with the horizontal plane through the apex drift, as I assume the question I put to you, that the edge would be without the surface lines of the Senator Stewart Fraction claim; was that correct?

A. I don't quite understand that question. I don't see how you could project a vein along the Osborne fault in a horizontal line.

Q. I understood you to say that if the vein be projected on an upward course along the fault to a plane, a horizontal plane coincident with the horizontal plane extending through the Siligo tunnel or apex drift, that the edge of the vein as so projected would be outside of the surface boundaries of the Senator Stewart Fraction claim?

1062 A. Yes, if I understand your question, that is correct.

Q. Then would you say that this model does not correctly represent that Osborne fault?

A. Why, that model does not pretend to show the extension of the so-called Osborne fault to the surface.

Q. If you should take a horizontal plane drawn through the Siligo tunnel or apex drift, would it cut the Osborne fault outside or inside of the surface lines of the Senator Stewart Fraction claim as shown on the model?

Mr. GRAY: Do you mean on the surface?

Mr. GUNN: No; my question did not relate to the surface, nor did your question.

Mr. GRAY: I was referring to a point on the surface.

Mr. GUNN: I beg your pardon; I have a notation of your question.

Mr. GRAY: I indicated it on the surface map.

A. I probably misunderstood the question, because my impression was that you referred to the line along which the vein, if projected on the plane of the so called Osborne fault, would come to the surface, that line, I believe, would cross the northeast side line of the Senator Stewart Fraction claim.

1063 Q. Does this model show that that Osborne fault, if projected to the surface, would fall outside of the surface lines of the Senator Stewart Fraction?

A. No, it does not. The model is only intended to show the position of the so called Osborne fault at the points where it has been actually seen, that is, with accuracy it shown those points. The celluloid has assumed the position which probably is not quite as the fault is in the ground.

Q. Now, there is one other question. You have a crescent shaped vein, or an apex following a crescent, and one segment of the apex is lower than the apex in another segment, isn't it true that any plane that you would take from the lower segment of the crescent and extend it, you would have an upward course on the vein at some point?

A. Yes, you could go in an upward course from some point in the lower segment of the vein to some other point in the vein. That course, however, would be oblique to the general dip and strike of the vein.

Q. Well, is that true? Let me just put a rule on that.

Mr. FOLSOM: It seems to me that is a question of common sense. It does not call for geological knowledge or anything else.

1064 I understand that the court takes judicial notice of ordinary A, B, C matters.

A. I am being educated all the time.

Mr. DINES: That was something that Mr. Gray developed.

Mr. GRAY: That was in a purely supposition case.

Q. Well, I am going to draw a crescent shaped apex on Defendant's Exhibit P.

Mr. FOLSOM: I have no objection to his answering, but I made that comment with the possible result of shortening things.

Q. (Continuing:) Now, if you have an apex in that form, and the segment between A and B is lower than the segment between C and B, is it not true that a cross section taken through the segment between A and B, if extended far enough, would show an upward course on the vein?

Mr. GRAY: Is that a plan or a cross section?

Mr. GUNN: It is supposed to be a plan.

WITNESS: A horizontal plan?

Q. Yes. This is supposed to represent the outcrop on the surface.

A. On a horizontal plane?

Q. No, not a horizontal plane, because there is a drop of the surface between A and B, and the segment from A to B is
1065 lower than the segment from C to B. I will ask you, having that apex, if you would assert that the dip between A and B at right angles to the course of the apex, if you would not go in an upward course if you pursued your course far enough?

A. At right angles to the dip?

Q. We will start at right angles to the point B.

A. Yes, I will modify my answer made before; you would be going on an upward course in that course, and following the general strike of the vein.

Redirect examination.

By Mr. GRAY:

Q. Following up along in such a line as that, you would come to the surface at a higher elevation than you started in, wouldn't you?

A. Yes, you would.

Witness excused.

1066 J. M. PORTER, after being duly sworn as a witness for Defendant, testified as follows:

Direct examination.

By Mr. GRAY:

Q. State your name, residence and occupation, Mr. Porter?

A. J. M. Porter, Spokane, Washington, civil and mining engineer.

Q. How long have you been following that profession, Mr. Porter?

A. It has been over 33 years.

Q. And where and in what capacities?

A. My first experience in mining was in the Black Hill, with the Homestake Mining Company in the engineering office. I was there about two years. I went there in the spring of 1880 and in 1882 I came to the State of Idaho. I was in the Salmon River country until 1885. Then I went to Salt Lake and opened an office there, and remained there until 1888, doing general surveying and mine inspection work. Then I returned to southern Idaho.

1067 I had charge of some mines at Custer, Idaho, for a term; then I went to Bay Horse, where I leased for a while on the Ram's Horn Mine. Most of my time from 1882 to 1885 was spent with the Ram's Horn Company, and other companies at Bay Horse, Idaho. In 1889 I came to this section of the country, that is, I came up here to take charge of the Gem Mine, and in the spring of 1890 I opened an office for the doing of general work in Wallace, and I continued that line until I went to Spokane in 1898 or 1899, where I have been generally engaged in either conducting the operations of mines or mine surveying or inspection work since that time to the present time.

Q. Mr. Porter, in the course of your general practice, have you had occasion to visit and inspect properties and examine them in different portions of the country?

A. Yes, sir, in this State, Dakota, Utah, Nevada, Washington, Oregon, California and British Columbia.

Q. Have you ever prospected and located mining claims?

A. Yes, a little.

Q. What familiarity have you with the veins and mines of the Yreka Mining District in the neighborhood of the properties in controversy here?

1068 A. My first inspection of anything in that district was in January, 1890, and during that year I was around there more or less, and the next year or two I was not in Wardner so much, but in other parts of this district, but since 1894 I have been in that district practically all the mines there.

Q. What experience have you had in the practice of your profession to observe the development of those properties during the many years you have testified you have been acquainted with them?

A. Well, quite a good many of them were in the prospecting stage at that time, and I have watched the development from that time until the present, especially so with the Stewart mine. It was nothing but a prospect when I first became acquainted with it.

Q. When was it that you first became acquainted with the Stewart and Stewart Fraction, or the property of the Stewart?

A. In 1899. Some time during that year I believe I made an adverse survey as against the Quaker. That was my first real acquaintance. While I have been over the ground since, that was the first time I ever inspected the ground, and not very extensively then. It was then owned by the prospectors and men who

1069 had located the ground. From that time until the present management came in control of it I was around quite a good deal, up to within a few months before it changed hands, I did the

surveying for the boys who did the development, and was around now and then making surveys, and was around during the time I was not making surveys.

Q. You say from that time up to within a few months before the present management took over the property you did such surveying as was done for the men who were developing it at that time?

A. I did, yes, sir.

Q. That took it up to about what year, Mr. Porter, as nearly as you can recollect; it was some time after 1900 at least?

A. Oh, it was along in 1905 or the fore part of 1906, along in there some place.

Q. Mr. Porter, have you been in to that property since that time?

A. I was in in 1908 and took a look through the mine, and then recently in October.

Q. That is, October of 1912?

1070 A. October of 1912, yes, sir, I have been in there quite a good deal of the time.

Q. Have you been through all of the workings which are accessible as far as you know?

A. As far as I know, I have been in all the works that are accessible. They may not be accessible now, as the ground is settling. Take No. 3, I had to crawl through almost on my hands and knees Sunday in getting through, and it may be closed now.

Q. Where did the miners commence to develop this property and where were they working when you first became acquainted with it back there in the early years of its development?

A. Tunnel marked No. 4 was in existence at that time. There were about five or six other small tunnels, and one of considerable length, that is all caved in. Of the condition in that I have no recollection. There is another tunnel marked here tunnel A, it is a short distance above the upper Stewart tunnel and bends around and crosses over this tunnel, this upper Stewart tunnel, at some place near the intersection or near where the upper Stewart tunnel passes over the old lower Stewart tunnel. That tunnel showed

1071 a little ore, a little carbonate, and some pyromorphite. This tunnel, upper Stewart tunnel, was driven in—well, I am getting a little ahead. There was No. 6 tunnel.

The COURT: This is on exhibit "B"?

Mr. GRAY: This is on exhibit "B."

A. Defendant's exhibit "B." No. 6 tunnel was driven in. That was the first work done after I became acquainted with the property, and in that they struck a little ore about half way between the mouth of the tunnel and the face. Then this upper Stewart tunnel was driven in with the expectation of encountering some of this ore that is shown in these two tunnels that I have mentioned. It did cut a little ore very nearly under where the present face of that A tunnel is shown. That "A" tunnel is longer than that, but that is all that is probably open now. There they struck a little native silver and a little bit of lead in a small vein, and they continued on, and about some place between that, I cannot locate it on this map, and the south boundary of the Stewart Fraction where this

upper Ste .. tunnel crosses the south side line of the Senator Stewart Fraction claim an upraise was made and some ore
1072 taken out, and a little farther to the south of that between stations L 5431 and L 5432 an incline raise was put up about thirty-five feet. There was a vertical raise put up about ten feet from that which got into the ore vein somewhat flatter. Some ore was taken from that, and just how much was stoped I don't know, but some considerable stoping was done, and driven out to the surface. While I have not been through that myself, I have seen the steam rising from here, from the mine vent.

Q. From here, you mean from the vent?

A. From the vent coming up from below. I won't say that I was through that, but I was aware of the fact at the time that they had put a hole through there and the miners spoke of it, and the manager told me about it.

Mr. DINES: We shall object to the witness stating any hearsay information whatever, and I move to strike it out.

The COURT: Yes, sir; that will be stricken out, what the manager said.

A. Well, from my own knowledge I know of a draft through there and the steam arising from the vent. From this little incline raise there is some ore taken out that I have seen coming
1073 out myself. I did not survey the stopes; they did not have their stopes surveyed, they did not spend any more money than was absolutely necessary, they simply surveyed the workings to keep track of what they had done. Continuing southerly they cut a vein running north; they drifted along that northeasterly about nearly 200 feet, possibly over 200 feet, and in a southerly direction about eighty or ninety feet. This is cut off by a fault on the southerly extension, but on the northerly extension there is still ore showing out in there, but it is not very high grade. The ore body through there was worked, was mostly rather small, from eighteen inches to three feet. They had a much larger body of lower grade ore; they put in some hand gigs and worked some of that, too, but the principal body they worked, that was something they could ship without concentration. There was also a raise run right along near this junction. Near the intersection of a vein, there was a slit that was nearly vertical, places you might say it was vertical, but the general dip was about sixty-five. They cut through a flatter vein of about forty-five degree pitch, the intersection
1074 near L. 5441, can be seen just below the tunnel and again just above the tunnel where the upper part of the ore is ascending to the northwesterly on an angle from about forty-five degrees, while below it is flattening off, it is not quite so flat as that, but at a flatter angle than this nearly vertical portion. On this upper portion of this vertical part it is what I call the vertical section, a steeper section than the flat one, extended up about sixty feet on a steeper vein; took some ore out of that, but the greater portion of ore came from this flatter portion.

Q. That is the vein that was dipping upward?

A. That is the vein that was dipping upward at an angle of about forty-five degrees.

Q. In what direction?

A. Northwesterly direction. From that they were stoping upward, from this No. 3 tunnel; there is ore connection through there. On this No. 3 tunnel there are a number of raises which show the dip from forty to forty-five degrees ascending in a northwesterly direction.

Q. What is the general direction of the vein as disclosed in those workings.

A. About north 28 to 30 degrees easterly. In some places
1075 you find local courses somewhat nearer northerly and southerly than that.

Q. I want to direct your attention, before we proceed any farther, to this raise which you have spoken of as having gone up somewhere between stations L5431 and around in the neighborhood of L5431, some place in there.

Mr. DINES: I beg your pardon; I did not understand the witness to state that there was any upraise at the point L5431. He brought it farther down to the southwest.

A. There are two in there. One is about half way between this point or between these two points.

Mr. GRAY: Between L5430 and L5431?

A. Yes, sir. And another—that was about seven feet southerly from station L5430. Then there is another between L5431 and L5432.

Q. Directing your attention to the one that is between L5430 and L5431, did you survey that at the time it was made?

A. No.

Q. At about that time?

A. I surveyed the tunnel along in there.

Q. You saw that raise?

1076 A. Yes, sir.

Q. And the ore from it?

A. I saw some ore that was coming out about that time.

Q. And the other one, the one just south?

A. I saw ore coming out. I surveyed that.

Q. When was it that you made those surveys. You preserved the notes, did you, of your surveys made at that time?

A. Yes, sir. December 16, 1902 is when I surveyed this little raise between L5431 and L5432, on defendant's exhibit "B."

Q. I want to direct your attention to defendant's exhibit "J," to a raise which is shown upon that section which Mr. Wiley has heretofore introduced. You furnished Mr. Wiley the information concerning the raise?

A. I did.

Q. Is that the one you have spoken of there?

A. That is the one I have referred to.

Q. Was the vein disclosed in that raise?

A. The vein was disclosed in that raise and some carbonate ore taken out of there.

1077 Q. Is there anything else in connection with these workings you desire to state? What was next done in the development of this property, and what, if anything, did you have to do with the laying out of that development?

A. The old lower Stewart tunnel was started as shown on this map, the mouth being at L5229. It started on a course—cut through this and reaching the ore body a little to the easterly in its downward dip. At the face of this——

Q. That was lower in elevation?

A. Lower; yes, sir, it is about 185 feet—about 195 feet.

Q. Lower in elevation than the upper?

A. Than the upper, yes, sir.

Q. Who laid out that work?

A. I did. The course you observe runs straight until it comes to a point opposite L5324. At that point a big fault was encountered, and not stoping it they had not made preparation, and they run in so that they could not continue any further there. They came back about half way back from that point to L5230 and drove a little more to the East and passed through that, and
1078 it is all lagged up tight. They had to drive lagging to get along through that; in fact, this is all pretty loose ground. At point L5316 an almost vertical fissure was encountered with a little carbonate of ore in it. That was followed off to the southwesterly about 60 or 70 feet where a sufficient showing is made to cause them to put up a raise on it some fifteen or twenty feet or possibly twenty-five feet higher and opened up quite a stope on this vein which runs easterly and westerly, and between "D" two east and D 1 east. There was quite a good deal of stoping done on that while I was with the company. This drift D 2 west was driven not quite so far as it is now. The main tunnel was driven southerly and around to the foot of this what is now called the Samuels raise. The raise was not put through at that time. This D 1 east was driven out a short distance, possibly about to L5319, and is marked Deering crosscut, was driven out some few feet to the southerly of D 1 east.

Q. You say that the main tunnel had extended around here to where this little crosscut runs back to the foot of the Samuels raise?

A. Yes, sir.

1079 Q. It is now called the Samuels raise?

A. Yes, sir.

Q. When did you next visit the property, did you say?

A. I think the next visit was in 1908.

Q. What further development did you find or extension of the development which you had started of the development of that vein at that time?

A. The main level as we called it then had been extended out to L5249, and drifts extended along the vein, as it seems to me from the sketch I made at the time, to the present face of that drift; that is in a southerly or a little southwesterly direction. They had also driven northerly from that along the vein and connected around through this Deering crosscut that had been put through there.

That is, they were connected but they were not reduced to the same level; one was higher than the other, but they had connected through. That was about the extent of the work at that time. There was some considerable raises, there were some raises and little crosscutting done at different places. The vein was opened out to a good width here, and some very good ore shown.

1080 Q. That was ore encountered by——

A. (Interrupting.) By what we call the main tunnel at a point approximately L5249.

Q. At that time did you observe the general course of the vein as disclosed by those workings and its dip?

A. I may have some courses and dips on that. (Referring to notes.) The courses taken on this were with a pocket compass. I have a course shown here on my notes at about the intersection of the tunnel with the vein at about that point L5249, of south 25 degrees west along the vein. That is about all I have. I have sketched the vein continuing along; I have sketched it just to keep it on the face regardless of course.

Q. When you next visited this property, Mr. Porter, in 1912, in October, I understand, what did you observe the course of the development had been subsequent to your prior visit and at the time you visited it on this occasion and in that connection, if you will, tell the court what you have observed from your inspection as to the course of that vein and its dip, and what familiarity with the development of that property from the very beginning justifies

1081 you in stating as the course and dip of the vein, just in your own way and using either the maps or the model to illustrate your testimony?

A. The development as shown by the different colored levels following along the vein as a miner would work it and generally in a course of north about 30 east is its course. In some places there are some slight changes one way or the other from that. The greatest distance exposed would probably be on the old lower Stewart tunnel where there is about 900 feet driven on the tunnel level which was sufficiently near the strike of the vein to consider that the strike. While it rises a little running to the southwesterly it is not enough to make any material change in the course of the vein. But that course projected a distance of about 900 feet, it would be north 43 east. The raises from that are going up at about right angles to that tunnel, a drift in a northwesterly direction. The incline shafts are going downward in a southeasterly direction about at right angles to that course given, and on each level except where disclosed by some faults, the general course is about as described. They vary somewhat from that, as I say. The general dip would be shown by the incline shafts and raises, being southeasterly, and the

1082 general strike of the vein would be shown on the various levels a little east of north and west of south.

Q. How far to the south have you been able to follow this vein on the various workings?

A. The most northerly part that I have seen the vein would probably be in the Siligo tunnel.

Q. I am going to particularly call your attention to that. From the Stewart tunnel downward where do you find the workings terminating to the north?

A. On the levels below that. There is some stoping done on a little loop shown around at the bottom of the incline connecting the Siligo with the Deering crosscut. There is a crosscut shown on that which I have not been in, but there has been some stoping done around the base of that on the level of the old lower Stewart, at the foot of that raise. Then again we find ore—the stoping shows that the vein has been along D 5 west and D 5 east, very little of that being open now, but you can see the timbers in there which is an indication that it has been stoped.

Q. Do you find a termination of the vein on its northerly course in these various workings?

1083 A. Yes, sir, it is terminated and against a fault or fault breccia in every instance.

Q. In every instance. I want to direct your attention before I go farther, to defendants' exhibit "K." Calling your attention to that cross section, I will ask you whether or not in your opinion based upon your experience, your particular acquaintance with veins in the Yreka mining district, and your acquaintance with this property in its early development, and your examinations made since, it is your judgment—whether or not it is your judgment that the vein continues upward from the upper Stewart tunnel as delin-ated upon that cross section?

A. I have no doubt of it at all.

Q. Now again directing your attention to exhibit "B" have you examined—are you acquainted with the Ontario mine and the workings within the Ontario mine?

A. Yes, I am very well acquainted with those works.

Q. You are acquainted with the Frank and the — ore bodies and the May ore body?

A. Yes.

Q. And the other workings from the Stewart which are shown connecting with those ore bodies?

1084 A. I am.

Q. Mr. Porter, will you state to the court what the general course of those ore bodies in the Ontario is and what the direction of the dip is?

A. The Frank stope—230 feet of a drift under the Frank stope is north 38 degrees east. The dip would be at right angles to that, ascending in the direction of about north 62 east. The raises shown on the map point the direction of that dip.

Q. The stopes above that show the course of the vein?

A. The stopes above that show the course of the vein.

Q. The same as the drift?

A. Yes, sir.

Q. Now, all right.

A. In the Gray stope and the Gray drift the course is north 30 east for a distance of 330 feet, and the stopes ascending to the westward as shown by the raises and colored portion called stopes.

Q. Mr. Porter, from your examination, your acquaintance with this property, where would you say was the apex of the ore bodies which have been developed in the Ontario to which your attention has been directed?

1085 A. The top—the apex of that vein, if not disturbed by a faulting would undoubtedly be off to the westward; here the hill rises several hundred feet above this, would be several hundred feet to the westward of those stopes.

Q. Have you walked along the connections with those two stopes marked in brown upon exhibit "B," the 300 level, and connections of the Stewart Mining Company, were they connected with those stopes?

A. Yes, sir; they connected with the top of the stopes.

Q. How far have you walked along there—I do not care in feet, but to what point?

A. I have walked from one end to the other. I have walked from the most northerly end along through the various workings until at point L5131 there is a short crosscut easterly, and then continuing on the level in a southerly direction into the top of the Gray stope. I find at point L5131 I left the main tunnel, gone south about 100 feet or such a matter, then swings off through the country rock about 150 feet following the drift in a southerly direction down into the top of the Frank stope.

1086 Q. At the most northerly end of that drift upon the vein what do you encounter?

A. The vein on each level terminates against fault breccia or a fault.

Q. Now, Mr. Porter, I want to direct your attention to this Siligo tunnel. Have you carefully examined that tunnel?

A. Yes, I have. I have watched the progress of that very closely, too, as they were driving it.

Q. Before I go to that,—in the upper workings of the Stewart, those that you were familiar with years ago in its early development what was the width of the vein; I do not mean first class ore, but the width of the vein as you found it up there?

A. In places it was about twenty-five feet wide, I think it would be. Close to twenty-five feet wide, possibly a little more than that in places, and many places not so much.

Q. Now then, if you will direct your attention to this Siligo tunnel and state to me what it shows?

A. The Siligo tunnel is driven along either on fault breccia or in vein matter. In places there is ore shown in that. As

1087 they drove to the southwesterly a flat fault is encountered dipping to the westerly; it dips about 30 degrees, 33, something like that, and it has been called the Clancy fault. I have not seen any ore above that, but I have seen gouge very similar to that I find under it, and it does not seem to be displaced, and I do not know whether the flat fault cuts through the vein or the vein cuts through the flat fault. There is an upraise to the surface near L5232. I did not find any ore in that, but it might be called vein matter up to a few feet, so it is considerably disturbed, and not far

from the surface. I would not say it is not vein matter; I rather think it is; there is no ore in it. There is driven along and in a fault, fault breccia, at L5082,—a crosscut is run southerly and cuts into a caved portion apparently over a stope. That shows considerable vein matter, in fact, you might call it vein matter nearly to the Siligo tunnel. Continuing easterly of L-5427, the drifts bent
1088 a little over easterly, and in the fact of that is rather hard rock, but showing iron strains and limonite; then the crosscut was driven southeasterly through a portion of that hard matter, and is now in a broken mass that might be called fault breccia.

Q. Mr. Porter, you have referred to the termination of this vein upon its strike or onward course against the so called Osborne fault which has been depicted by the wide red line marked on Plaintiff's Exhibit No. 3, which shows the course of that end of the vein. As you have observed that, what does that termination against the Osborne fault represent?

A. It would be the end of the vein as it is cut off by the Osborne fault—I say by the Osborne fault, but I don't know that it always reaches the Osborne fault. The Osborne fault is pretty well shown in the fir tunnel in three places, and again on the 200, but on the upper levels I hardly think it has reached the Osborne fault, though it may be in the fault breccia along there.

Q. Mr. Porter, from your acquaintance with that property and your general familiarity with the veins, can you say whether
1089 or not any portion of the apex of any of the ore bodies disclosed in the Ontario, as far as shown, lies along this edge of the vein which has been termed the apex by the Plaintiff in this case, and which is painted red on Exhibit 3, in its course northwesterly and southeasterly?

A. If any portion of the stopes lie- under that?

Q. Is any portion of the apex o fthose ore bodies within that edge or end of the vein to which I called your attention?

A. No, not at all.

Cross-examination.

By Mr. DINES:

Q. Mr. Porter, you don't mean to be understood by the court as stating that the Ontario ore bodies are not a part of the same vein as the Stewart, do you?

A. No, I do not. I consider that they are part of the same vein on its strike. Of course it has been faulted in places, and they may be different segments of the same vein.

Q. You concede, do you, the first portion of the course of the apex as shown on Exhibit 3, north 30 east?

A. That portion?

1090 Q. Yes.

A. That is about the course of that line down there?

Q. Now, do you not find the workings underneath the ground that you have studied a change of course as you go on into the middle portion or the south central portion of the Senator Stewart Claim?

A. Yes, there is some change to the northeasterly on some of those levels.

Q. You have had a great deal of experience over a wide range of country in mining veins. Have you not frequently found that veins may have one course in one portion or segment, and yet they will change and have all kinds of different shapes, sometimes in the shape of a horseshoe, sometimes a crescent or sometimes a curve?

A. Well, I haven't run across any horseshow veins nor crescents, but I have found them where the course was somewhat curved. Sometimes you may have an intersection of veins, where one can go from one to the other in such a way that you would swing around like that.

Q. I am not speaking of the intersection of veins, but beins as they are discovered and lie in the earth; isn't it often the case that you find them curved?

1091 A. Curved to some extend, yes, but hardly to the extent of a horseshoe.

Q. When you speak of the general course of the Stewart vein, therefore, as being north 30 degrees east, you are eliminating the very marked change in the course shown on your own exhibit, Defendants' Exhibit B, in the various workings in the southeasterly portion of the property, are you not?

A. No, not entirely. Now——

Q. Are you eliminating it any?

Mr. GRAY: Wait a minute. He started to explain.

Q. All right.

A. You take the No. 3 level, and it is pretty continuous, the course that I have given on the map would be about the general course, including that portion. If you take a small portion at the northeasterly end, up on No. 1 and No. 2 you would find a divergence from that course.

Q. Well, up in the tunnel?

A. If you take the Stewart tunnel level from the extreme southerly point to the most northerly point where, according to Plaintiff's Exhibit No. 2——

Q. You have told us about that; I am asking you about
1092 the body of the vein?

Mr. GRAY: He has a right to explain his answer, and this thing of cutting the witness off won't aid counsel.

Mr. DINES: I don't mean to cut him off, but I am asking about this portion here, and your honor sees that he departs from that to the tunnel level, which he has already answered about. I pointed to this part here.

Mr. GRAY: He answered you equivocally to that question——

Mr. DINES: I think he has done just that.

Mr. GRAY: Because it is a case where he could not say yes or no, although he did say he took that into consideration to a certain extent, and he certainly wants to explain.

The COURT: I think the explanation has already extended over that lower Stewart tunnel level. He can confine his answer to the point to which counsel directs his questions.

Q. Now, in this level I show you here, which is marked on that exhibit as Drift 205 east, and passing the raise which is designated 304 east as you follow in this direction, I will ask you if that does not show on a level for a number of hundred feet a marked
1093 change in the course from that that you have given generally.

A. Well——

Q. You can answer that yes or no, and then you can explain if you desire.

A. The portion from raise 211 east along that drift does show a divergence from the course given, but I have given an average course from the point at the foot of raise 218 east to the southerly part of it, so that while it may be a little more easterly, from this point to the foot of that raise, it would be a little more westerly than the course I have given.

Q. Take the next level to that, which is marked on that exhibit Drift 105 east, and tell me from the point that is indicated in red near this southerly—or some little distance from the southerly side line of the Senator Stewart Fraction claim—it may be as far as one third of the distance up, I should estimate, between the side lines, that point right there—if from there to here you do not find that change, and that you trace it along the red coloring on this exhibit?

A. Yes, you can pick out a portion on any one of these levels that divergence from the general course. From that point designated by you southerly on that vein it would not be as
1094 much to the east as the average course that I have given, while above that point it would be a little more to the east than the course I gave.

Q. How much more to the east? Will you take the course of that portion on that level between the points here as shown, from the top of raise 211 east first?

Mr. GRAY: That manifestly bends right back again to *to* the north.

Mr. DINES: Well, I asked him about that.

The COURT: Let Mr. Dines examine the witness. You will have a change to re-examine him.

Mr. GRAY: I don't want to. I want to call attention to the remarkable places where he wants him to take the course.

Mr. DINES: His honor sees it, and it is not for that purpose alone. I want the record to show that course there, that is all.

The COURT: I think I appreciate your object.

Mr. DINES: Not that I think your honor needs any instruction in the A, B, C of mining by any means.

Q. I will ask you to take the course of Drift No. 105 east from the point shown there and mark on the exhibit, to the top of raise No. 211 east?

1095 A. May I mark that point some way, to designate it?

Q. Certainly, if you desire.

A. I have marked it with a small "A" on Exhibit B. That portion would be north 74 degrees east.

Q. Now then please take the portion from the top of raise 211 east

to the small B which you have marked at the other crest shown in that drift?

Mr. GRAY: A crest?

Q. (Continuing:) There is a turn there that Mr. Gray called attention to a minute ago.

A. That would be north 48 east.

Q. Now, from the point B that you have marked on there, to the face of the drift, as far as——

A. You mean to the crosscut from the foot to the hanging wall?

Q. No, I am including the crosscut just as far as you know the vein to be.

A. Well, that is all a crosscut.

Q. I thought you had some vein material shown in the 218 east?

A. You could have vein matter in a crosscut across the vein.

1096 Q. Surely. Take the course as you have it there?

A. South 70 east.

Q. From B, though, to this point, the level from B to the face of the drift, the level is not, you think, along the course of the vein?

A. No, I don't think so; I think that is a crosscut from the footwall to the hanging of the vein, where it is cut off by the fault.

Q. It is in the vein, however?

A. Yes, I would call that in the vein. They are close in there, right in the breccia along that fault.

Q. Now, on drift No. 5 west and drift No. 5 east, taking the course of the working there?

A. That is, of the Stewart?

Q. Yes, about there?

A. It is north 56 east.

Q. And the course of the apex tunnel, which you call the Siligo tunnel?

Mr. GRAY: Do you want the course of the tunnel, and not the course of the vein in it?

Mr. DINES:

Q. Well, I will limit it on your suggestion, Mr. Gray. Take the course of the tunnel, of the portion of the tunnel where you
1097 find the vein material which you discovered?

Mr. GRAY: Do you want the course of the vein, or the course of the tunnel?

Mr. DINES: We are taking the course of the workings now. You have given us a good many courses of the workings.

A. North 65 east.

Q. Now, the workings that I have called attention to on the vein in the tunnel and in these various levels, do show a curving of the course of that vein or a change in the course of that vein from what it was down there crossing the southerly side line of the Senator Stewart Fraction, do they not?

A. A portion of it, yes, sir.

Q. Yes. And I will call your attention, please to Plaintiff's Exhibit No. 2, and ask you if in the stopes themselves between those levels, you do not see the same change in the course of the vein?

A. Yes, the stopes follow about the course of that part of the vein. There is a broken—on the 100 foot level, the old Stewart tunnel level, rather, this part is broken apart from the others. This drift No. 5 west and Drift No. 5 east is broken apart from the other.

1098 Q. It is broken from the other?

A. Well, it is broken from some place, it seems. I won't say when, on this level, you are not within possibly 30 feet of where your maps have placed the Osborne fault.

Mr. GRAY: What level is that?

A. That is on the old lower Stewart tunnel.

Q. At what point; indicate that, so the record will show it, the point 30 feet from the Osborne fault?

A. Well, it would be just about the figure 8 in L-5268; that is apparently a station in the raise, up to the Siligo tunnel, but the figures extend out so that the figure 8 comes right in the face of that drift.

Mr. DINES:

Q. Well, that is part of the sill floor of the stopes there, isn't it?

A. Yes, it is on the same level, so that those come together——

Q Isn't that shown on Plaintiff's Exhibit 1?

A. Yes, that is shown on the map.

Q. As a part of the sill floor?

A. That is what I say, it is on the same level, at the raise within 30 feet of the Osborne fault, but if you are taking the course of the footwall of the vein it will hardly be proper to swing over

1099 here and take a disconnected piece that could not be in there between that point and the Osborne fault.

Q. Do you call it a disconnected piece when we have shown you on Exhibit 2 all the stopes lying immediately above this, and extending, as the evidence shows, to within 15 feet of the apex drift, and to a raise running from the stopes right up to the apex drift?

A. You don't understand me. I say, it appears to be a disconnected piece from that.

Mr. GRAY:

Q. This from that, what do you mean by that?

A. That part along drift No. 5 west and drift No. 5 east apparently has no connection by stope or otherwise, except in the crosscut, with that portion on the fault on the main level.

Mr. DINES:

Q. Well, you have been up in here yourself, haven't you?

A. I have been up in here, yes.

Q. And you know that the vein does extend up in here?

A. I know the vein extends up in here, but a few setts above a

little raise is shown here without any station near it, probably I can tell you better over here.

1100 Q. Yes, it is designated on Exhibit 1.

A. The figures are so small that I can't make them out.

Q. I will get my glass and tell you what it is.

A. Extending up from the stopes near L 5528 on Exhibit B, the raise extends up and connects with the top of an old stope, which apparently has extended upward from this drift No. 5 east and drift No. 5 west, but there is no connection that I have been able to find between this stope at that raise and the stope I was speaking about on the level of the Stewart tunnel further to the westward, and extending upward to the Siligo tunnel. The stope map shows that there is none.

Q. It shows that there is no actual work on it, but you do not mean to be understood as expressing your opinion that the vein does not extend on up there, the vein itself; I am not speaking about commercial ore, but the vein?

A. I rather doubt it. I think there will be found to be some break in there. The stopes shown over drift No. 5 east and No. 5 west are higher than are shown over the northerly end of the main drift, than those over the tunnel.

Q. But you have the vein right under the apex drift, extending out to a point above the raise that you testified to, the crooked raise?

A. It is not a question of extending easterly or westerly.

1101 You have a point here—you have these stopes higher than they are there, with an ascending slope. If this continues on its course it would not connect with that.

Mr. GRAY: From here to her and this and that, do you mean the stopes above drifts No. 5 east and No. 5 west?

A. The stopes above 5 east and 5 west, yes.

Q. And the vein as disclosed in the Stewart tunnel level over to the west?

A. At the northern end of the Stewart tunnel level.

Mr. GRAY: Be a little more careful in giving those points.

By Mr. DINES:

Q. Have you followed up the raise from the top of the stopes above drift No. 4 east?

A. I have.

Q. That is a vein, isn't it?

A. Yes, I took it to be. There are stopes on each side.

Q. And you think the vein is disclosed in the apex drift?

A. I am inclined to think so, yes.

Q. And you think the vein is disclosed in the upraise No. 218 east?

1102 A. There is a vein disclosed alongside of that.

Q. And you think that the vein is terminated at the point immediately above raise 218 east?

A. No.

Q. In the drift, do you not, where it comes in contact with the Osborne fault?

A. No, I think it is terminated further back than that; I think it will go back here near Station L 5361 on Exhibit B, possible L. 5362.

Q. Now, you think the top of it is in there?

A. The end of it is, yes.

Q. And you think the present edge of the vein is there, don't you?

A. It is the terminal edge of that piece of vein.

Q. Do you think it is the terminal edge of the vein that is shown there?

A. Well, I would not call it an edge exactly.

Q. Well, call it anything you please. Is it a terminal portion of the vein there?

A. The vein would be something in the nature of a slab, and if you cut it off with the fault you would have the end of the vein here, you cannot say that it is an edge. This would be the
1103 hanging wall of that end of the vein, and this below would be the footwall of that vein, and the angle would represent the cutting off by the fault of the end of the vein.

Q. That is, as the vein is a solid body and is cut by a plane, you would not have the intersection of a line by a plane?

A. It would be a segment of a cube.

Q. A segment of a cube that you do find there?

A. Yes.

Q. Now, is it the termination of the vein that you spoke of finding at the top of raise 218 east?

A. It would not be in the top——

Mr. GRAY: He said before it was not there, I think; he said it was further back.

Q. I understood you located the top of the vein in this little working here called East No. 3 crosscut?

A. In the nature of the hanging wall of a vein, being the top, you might call it the top if you like, but I call it the termination of the vein.

Q. You would prefer to call it the termination of what, of the hanging wall?

1104 A. Of both walls, of the end of the vein, and that explains to some extend this curve northerly along that footwall, and when you get to this fault, evidently at the angle of the fault it makes a decided turn and it goes to the hanging wall of the vein.

Q. Whatever you call it, it is the termination of the vein at that point, isn't it?

A. It is the termination of the vein at that point.

Q. And you cannot follow the vein higher up on a higher level than you have located it in this drift No. 5 east crosscut on Exhibit B, is that right?

A. Not upward on the fault, no.

Q. You do find a vein in the apex drift, do you not?
A. Yes, I consider that that is in the vein or very close to it.
Q. And you find the vein in the crosscut to the hanging wall from that drift, don't you?
A. Yes, a vein appears in there.
Q. And that is at a distance of about 30 feet from the drift to its face?
A. About that.
Q. Then the vein that you find in there is 30 feet wide
1105 or more?
A. Probably on that hanging wall side.
Q. Then, going on from the crosscut, do you find the vein in the drift to the point W prime, where the Orborne fault is disclosed or the gouge that you have spoken of.

Mr. GRAY: He did not speak of the Osborne fault being disclosed there.
Mr. DINES: No, he called it gouge. He said it had been called the Osborne fault, but is was gouge.
Mr. GRAY: No, I don't think he said that.

A. There is considerable gouge and breccia along there in the apex drift. There is no mineral shown right in the drift along there, but I believe that the drift is really in the brecciated portion along a fault upon which this vein has come up; the footwall of that vein.
Q. You don't think the vein can be identified any higher above that line; don't you think that is about the top of it?
A. Oh, it may run up some little distance higher, but it is near the surface there.
Q. Well, do you think the vein is further to the south from the gouge that you speak of now, would be about as shown there in that apex drift?
1106 A. Either along in that, or possibly up about where this apex east 3025 is marked; it may extend up that distance.
Q. At least you are satisfied that the apex of the vein at that part of the apex drift is within the lines of the Senator Stewart Fraction claim?
A. Undoubtedly.
Q. And you identify that vein to the point where you find the gouge, do you not?
A. No, I don't, but it may extend out to that.
Q. Well, do you think the vein is further to the south from the point W prime as indicated here to the crosscut to the hanging wall?
A. Well, it is probably on that dip, following the ascent from where the stope is over here, that it may run over the drift and be above the drift here. As I say about where that pencil marking "Apex, East 3025" is marked.
Q. How far to the east now do you identify it as apex; can you identify that vein from the workings as the apex?
A. In the neighborhood of this arrow marked "A." Now, possibly by following these gouge seams that run out into the wall, more to the right, it will probably follow more northeasterly
1107 than that seam.
Q. But there are no workings there to disclose that; don't

you find vein material to the south of the gouge which is on the right wall of the drift as you go in, and after you have crossed the crosscut—passed easterly from the crosscut?

A. Yes, there is some material there that shows some iron stains, and there is also, beyond this fault in the face of this, there is more mineral stained rock.

Q. The full vein is not shown in the workings?

A. It does not show that it has ended at this fault.

Q. The fault seems to be its northern boundary; it goes up against the fault?

A. I am not so sure of that. I say there is mineralized matter beyond that fault in this face, the extreme easterly face of the northern portion of the apex drift.

Q. Can you identify that mineralized matter in the extreme face of the drift as part of the apex of the vein, or about the apex of the vein?

A. Well, the apex of the vein, if this is a part of the vein, would be a little higher and possibly extend over that side line.

Q. You think it would go over that side line?

1108 A. Possibly.

Q. Well, there is a good deal of difference between possibly and probably?

A. Well, probably, I will say.

Q. You think it would probably do that?

A. Yes, I think that this drift has turned away from the main gouge it was following, and it will probably follow over there, keeping more in that line.

Q. Then you don't think that the apex of the vein is terminated by the Osborne fault here at the point W prime?

A. No, I don't think that is the Osborne fault.

Q. So you don't think the apex of the vein is terminated there?

A. I do think——

Q. You think that you may have the apex of a vein further on to the east and northeast than the points that you have put it on this Exhibit 1, do you?

A. Yes, I think it is quite probable.

Q. Now, when can you next identify any point of the vein as you go to the easterly, toward the easterly end line, the termination of the vein?

A. Well, as I have pointed out, about L 5262 or 5261 on

1109 Defendant's Exhibit B.

Q. That would be on Exhibit 1 that I am indicating to you about in here where I hold my pointer?

A. Will you let me see that station?

Q. Yes, I will get the glass and show you what the station is. 2549 is this one, and this is 2571 there, and that one where it is marked there is 2612.

A. Now, you might consider that the northeasterly termination of the vein on that level, of this portion of this vein, this segment of the vein.

Q. At point 2612 in the east No. 3 crosscut on Exhibit 1 you find the first point of termination of your vein, do you? You can use

this glass and identify those points, if you are uncertain about them?

A. Your glass is hardly strong enough for me, but I will take your word for it.

Q. Well, that is given as the point by several witnesses?

A. Along the crosscut at that point I think they are cutting across the end of the vein along the fault, where it is terminated by the fault.

Q. You don't call the part of the vein that you see there apex?

1110 A. No.

Q. But you admit that it is a terminal?

A. Yes, it is a terminal. You can the end of a house a terminal, but it is not the roof.

Q. Yes, it is a terminal, but you would be pretty certain if you had it up along the eaves, that it was not the foundation?

A. Well, it would not be the comb of the house.

Q. Well, it would not be the foundation. It would not be the bottom?

A. No.

Q. Then, as you go along the apex from the point that you have designated—or going along the working from the point you have designated and just east of No. 3 crosscut, for what length do you find the vein exposed in there, how many feet approximately.

A. I find the ore exposed along in that neighborhood about forty feet.

Q. Now, the answer that you have given me to the last question where I was referring to it as the point disclosed there, applies to all of that 40 feet; you think that is a terminal edge of the vein?

1111 A. Yes, that is the end as it is cut off diagonally, the vein, from the foot to the hanging wall is cut off by the course of that fault.

Q. Now, all of that is not against the fault, is it?

A. All of it might be against the fault, it is nearly to the fault; it is up against the breccia I should judge. Of course it was not disclosed, exactly, but it has that appearance. The fault is further back in the footwall country.

Q. Isn't it a fact that of that 40 feet there was fully 25 feet that you could identify as being away from the fault?

A. I think it is all close along the breccia following the fault; it is up against the breccia.

Q. Then you go to the top of raise 218 East; do you find any portion of the vein showing there at the top of that raise?

A. No, I think that is in breccia. I think the vein, the division line—I followed that raise from the bottom to the top as it progressed, and up to this little elbow between the 100 and the Stewart tunnel level, you could follow ore, but from there on the ore ap-

1112 parently was more to the left of the raise as you went upward, and it bears off to the left of the raise as you go up the raise, and you do not find it again till near the intersection of Drift No. 5 east.

Q. At the terminal edge of the 40 feet you take the direction that

way—if I can so describe it—the course of that 40 feet of the vein as shown in the working is about the same course as the working has, as it lies up above the breccia?

A. Just about. The course as shown—will you read that station number?

Q. Between No-. 2612 and 2571, I think it is.

A. Well, I see well enough to verify that, but that would be approximately the course, I should say. Driving over further to the westward it was bearing more away from the fault, and the ore would show a little above.

Q. That would be from that point a distance of 40 feet where it is very nearly east?

A. Yes, the course of the fault would be very nearly east.

Q. Now, going from that point to the next point of the vein that you have shown, I understand you identify it at the bend where you say the raise No. 218 east, about near a point midway of that
1113 raise, and you think the vein goes up in the direction that you have indicated from where you have seen it, up about to the point where that level intersects, is that right?

A. Pretty nearly there.

Q. Now, designate that line with two letters on Exhibit No. 1, putting the letter "P" on each side, and draw a line between the middle point where the vein is shown in the apex and the point the furthest easterly that you can find it in the workings; mark it with the letter "P" to indicate that it is identified by Porter.

A. A blue dotted line, running from the point in the raise 218 east, about half way between the 100 foot level, and the old Stewart tunnel level, crossing to the point shown at station—what is that station?

Q. At 2571.

A. All right, at 2571.

Q. Now, the portion of the vein that you have last designated, do you admit that that is a terminal edge of the vein?

A. Yes, I think that it is the end of the vein in its northerly course.

1114 Q. Now, tracing from the point that you have indicated in the raise, about the middle of the raise between the two workings, and which you have designated by the broken line in blue, marked with the letter "P," please tell me whether or not the vein shows from that point in Raise 218 East to the bottom of the raise?

A. With the exception of where this raise has passed through the old 100 foot level, and some timbers are shown there, and as it passes through that level, you can see the ore on the left hand side or south side of this raise, you might say, from the 200 foot level up to that point, up to the point where this dotted blue line departs from the raise.

Q. What is the course of that portion of the vein as shown in that working; does it follow substantially the course of the raise?

A. Yes, that would be about the edge. There may be place, and there are places where there is a little ore shown at the right hand

side, but this is approximately the course of that end of the vein on its dip.

Q. Is the portion of the vein that you have seen in that raise a terminal edge of the vein?

1115 A. It is more than an edge; it is two edges in the end of the vein.

Q. Well, I think you can answer that question as you have answered this, can't you; is the termination of the vein there? I am not asking you to commit yourself as to the apex?

A. It is the termination of the vein against the fault.

Q. Now, taking from the point that you have named, is the vein down on the 200 foot level from the point where the upraise 218 leaves it to its face?

A. No.

Q. How far can it be seen?

A. It is in fault breccia; the last ore I have seen would be about the foot of that raise. There was possibly a little thinning out in the bottom of the drift beyond the bottom of 218 east raise, but beyond that, out to the top of this raise 214 east it is in breccia.

Q. I call your attention to the 200 foot level, and that portion of it that is east of raise 218 east, and ask you where is the vein from that up; is it above or below it?

A. Above the drift?

1116 Q. Yes, is it above that level or below?

A. It is probably below it.

Q. What is there to show that it is below it?

A. There is another level, the 300 level down below it.

Q. Is it shown in raise 314 east as it follows that line?

A. Raise 314 east starts from a stope, a few floors above the 300 foot level, and the first 10 feet of that raise shows ore on the left hand side as you ascend, but none on the right hand side. That follows upward on a gouge on a dip of about 40 degrees for about 55 feet; then it is straightened and goes up on a steeper dip, so that the average dip for the 85 feet would be about 45 or 50 degrees. Then it goes up vertically into this 200 foot level.

Q. Then you can identify the vein in that portion of the raise that you have referred to to the southeast of the bottom of raise 218 east?

A. To the southeast of the bottom, yes. I can see the *the* vein up for ten feet from the bottom of the raise.

Q. And it has been stoped through there, hasn't it?

A. Stoped part of the way up, and then the raise runs from the stope.

1117 Q. Will you designate that raise on Exhibit 2 that you refer to where you have seen the vein a portion of it? Exhibit 2 is the stope map. I think there are no points designated?

A. No, no points.

Q. Well, you may be able to put a mark on that with a pencil that will show about where you found it there?

A. It is at a point about 350 southerly from the northeasterly cor-

ner of the Senator Stewart Fraction to the foot of that raise; the center of it would be about 10 or 15 feet westerly of the line.

Q. Are you able to identify the vein, the part of the vein disclosed there as a terminal edge?

A. In the same way that the other is a terminal edge.

Q. Now, you were asked about the early days of the workings in the Senator Stewart Fraction. Calling your attention to Exhibit No. 2, I will ask you if drift No. 1 east, that was the one that you first referred to, I believe as being on the vein, extending some feet——

A. That is on a practically vertical fault.

Q. That is a vertical fault, is it?

A. Yes, or it might—it is mineralized to some extent.

1118 Q. But no stoping was done on it?

A. There may possibly have been a little stoping done on that.

Q. You are not positive about that?

A. I am of the impression that there was some stoping done on it.

Q. Now, drift No. 2 east is on the same level, is it?

A. Yes, the same level.

Q. Does that show anything or cut any vein?

A. That is caved; I cannot get into that. That was run since my connection with the mine.

Q. Now, you have the old lower Stewart tunnel going through there, part of it marked "Deering Crosscut"?

A. Yes.

Q. Does that show any vein between the point here marked 35 level, and the termination of the Deering crosscut?

A. That is very closely lagged. I don't know of any vein matter in there between those points you mention, but there is a two-compartment raise about——

Mr. GRAY: It is called Raise B, I think.

WITNESS: It is not marked, but it is about 40 feet northerly

1119 of L 5312 on Defendant's Exhibit B, which runs up some 40 or 50 feet into a stope, and the stope is connected with the one marked as 35 level.

Q. Do you know whether that raise was on a vein or not?

A. No, I don't know.

Q. But you do know that there was stoping done on what was known as the 35 level?

A. Yes, I know that, and that considerable ore was taken out.

Q. Why was it called a crosscut in through here, the Deering crosscut?

A. It must be crosscutting the vein; it is crosscutting the formation.

Q. A crosscut is a working where you are crosscutting the formation looking for your vein?

A. Yes, that was what they were driving the Deering crosscut for—to shorten up their haul. The tunnel was driven more southerly until the vein was intersected as I described in my direct examination, then it was drifted upon northerly, and then this Deering crosscut was driven in and cut the vein, and some places—about the

middle of this drift they drifted southerly on the vein to make the connection. I don't remember just where the connection was made. I was in there soon after it was made on this level.

1120 Q. I will ask you if the connection between the crosscut and the vein was not made at the foot of drift No. 4 about in there?

A. No, I think not; I am under the impression that we came out to the south from this Deering crosscut before we crawled through the hole into the other drift.

Q. Now, going down on the old lower Stewart tunnel, I will ask you if that is not, from the point where the three compartment or raise—what is that?

A. There are two chutes and a manway.

Q. The chutes and the manway indicated up near the 35 foot level on Exhibit 1, if that is not absolutely through barren quartzite?

A. I think it is.

Q. And all down through here until it cuts the vein to which you refer down here in the neighborhood of the Samuels raise?

A. Well, it is considerably to the south and east of the Samuels raise.

Q. The fact is that your old upper tunnel was driven along, trying to pick up that vein, and never struck the vein until they came down to the point of intersection here where the 85 foot level and

1121 the 145 foot level were joined together, isn't that right?

A. That is right. They got the vein and found some native silver and crystalized lead, just about where this working here crosses the tunnel, something in the neighborhood of 150 feet from the mouth of the upper Stewart tunnel.

Q. And then they went back on it?

A. Yes.

Q. Trying to still pick up that vein, looking for the vein?

A. No, no; they were drifting on the vein then.

Q. It is a drift on the vein; that is correct. After they encountered a vein at this point they drifted back this way on their vein?

A. Yes, and also southerly.

Q. Why did they stop at that northerly face?

A. There was no reason, except that the ore was not high grade enough to be profitable.

Q. Do you know what that face shows; did you ever see that northerly face where it crosses the southerly side line?

A. I have seen it lots of time-. I don't know whether I made any notes of that.

1122 Q. Did you make any notes of the showing in that vein?

A. Well, I will see if I can find some note of that.

By Mr. GRAY:

Q. Do you refer to the old notes that you made in 1901 and 1902?

A. To the old notes, yes.

By Mr. DINES:

Q. Well, do you remember what it shows now; have you been in there?

A. I have been in there.

Q. Is it accessible?

A. I am of the impression that it shown some low grade ore in there now.

Q. Is the 145 foot level on a vein?

A. Well, that is not accessible now to any great extent, but I am inclined to think that that was on this Stewart vein on which this vein shown just to the north of the intersection of the upper Stewart tunnel with the vein, was extended upward.

Q. There is a vein shown at this point at the 145 foot level near the winze that has a deep dip of about 65 to 70 degrees, is there not?

A. The upward extension of that was on a dip of about 55 to 60, the raise, and just underneath the level it showed a little bit
1123 steeper, and there is an intersection of two veins, one being at an angle of about 45 above the level, dipping up underneath this steeper one, and below that they are both a little steeper, and that fault showed in one sett down there that I have seen recently.

Q. Those veins had different dips?

A. Different dips.

Q. One of them flat and the other steep?

A. Yes.

Q. And the steeper one varied from 65 to vertical?

A. You might say from 55 to nearly vertical.

Q. Now, this portion of the tunnel, is that a crosscut?

A. That is a crosscut.

Q. Nothing was encountered in there. What is the length of that crosscut?

A. Well, how much of it?

Q. Well, takine it from—directly under the tunnel? *Q.* Yes.

A. To what point; to the intersection of the vein?

Q. Yes, to the intersection of the vein first encountered.

A. That would be about 360 feet.

1124 Q. And you have the old lower Stewart tunnel and the crosscut up to the north?

A. Yes.

Q. And this portion of the tunnel and crosscut to the south?

A. Yes.

Q. So that there is a considerable distance of country in between the veins that you refer to on the west and the veins on the east?

A. There is a considerable distance. There is also a difference in the elevation that has quite a good deal to do with it.

Q. You know that there is a fault that some have called here the Clancy fault, that is shown at the point W 2 prime, and it seems to cut through that country and cut off the veins that you have referred to as showing in the westerly portion?

A. I don't know that there is a fault in there—I know that there is a fault called the Clancy fault, and I have seen it a number of times, but I don't know if it cuts the vein off or not.

Q. You know that in these long crosscuts they did not pick
1125 up the vein?

A. That means nothing. It is so much higher, so far

above the upper Stewart tunnel level that it would carry it away over this way, and it would be in the footwall country of the vein.

Q. But you know that there has been no physical connection opened up between the veins on the west and the veins on the east?

A. That is true, and I am surprised that there has not been more prospecting done there.

Q. Now, do you not think that the prospecting was done when the tunnels were driven across there as crosscuts, and when the tunnel for a great portion of its length in going to the south was a crosscut, and when there were branches driven off from that, or crosscuts, and when the upper Stewart tunnel level is a crosscut crossing the country and picking up no vein, don't you think that is a good deal of prospecting?

A. Not at all. It doesn't matter how much you run around in the footwall country of the vein, if you do not go to where you would naturally expect the vein to be on its downward projection, it is not prospecting.

Q. It means ill directed prospecting?

1126 A. Very ill directed.

Q. You were not in charge when that was done, were you?

A. No.

Q. Nor was the plaintiff in this case?

A. Well, the plaintiff in this case drove part of this work, but most of it——

Q. Most of it was done by the predecessors of the Stewart Mining Company, in working the property, wasn't it?

A. Yes, they did crosscut far enough here to get under to get the vein where it would be on its downward projection, to get to where it should be on that level.

Mr. GRAY:

Q. Where do you mean, up here on the Stewart tunnel level?

A. I say that that work was done, that he was speaking of, that it had not been driven far enough to the easterly to catch the vein where it would be found on its downward projection from the upper works.

Mr. DINES:

Q. And there has not been and is not enough development on that portion, I mean the western portion of these claims, to enable you or any other mining engineer to odentify and correlate the veins on either side of that territory, isn't that right?

1127 A. Not positively. If you will come to the model I think I can explain the showing there. You will observe that, drawing downward from this level, this work is all underneath where this vein should be on its projection from the upper Stewart tunnel to the old lower Stewart tunnel. Now, this Clancy fault is shown about the top of this—what is the name of that jack-knife raise?

Mr. GRAY: It is called No. 7.

WITNESS (continuing): No. 7 raise, but that is to the easterly of our line as drawn downward, and there may be some displacement

as shown on this cross section which is marked Defendant-' Exhibit J. Now all this work the counsel is inquiring about would be entirely under that vein and would not develop anything one way or the other.

Mr. DINES:

Q. But you have, though, a developed portion of the vein that you have seen, and you know now—you can now see it on these exhibits and in the ground, can you not?

A. In my estimation there is two developed portions of that vein, Mr. Dines.

Q. Now it is true, that, if a vein—if it be, and I am asking you to assume no responsibility for the statement—if it be that the apex of a vein is in the form of a crescent and with a bend, that
1128 you may have underlying portions of the vein as it descends into the earth, lying under the same apex from both points at which you could go to in a downward course?

A. If you take, for *examine,* a funnel, you can start from any place on the edge, and you can go down that way.

Q. And you have seen development of that kind, haven't you?

A. No, I haven't seen any funnel development in mining.

Q. You have never seen two apexes covering the same body of ore beneath?

A. I have seen claims located on the apexes of veins so that their extra lateral rights conflicted, their lines conflicted on their downward course?

Q. You have seen that?

A. Frequently.

Redirect examination.

By Mr. GRAY:

Q. Mr. Porter, I just wanted to ask you as to one matter that I think you can illustrate to the court upon the model. There have been a great many questions directed to the course of the vein in this drift No. 5. Perhaps on the model you can indicate to
1129 the court. That, as I understand it, has been testified to by the witnesses for the plaintiff, that there is a roll in the vein there, and by the witnesses for the defendant- that there is a fault there. You might explain to the court why you get that course along that drift in places which does not in any sense represent the course of the vein?

1130 A. If that is a part of the vein there, it is, I imagine, a segregated portion. I have not seen that fold. I have been up in this raise and seen the top of the old stope, but the folding down here I don't recognize. Now, in the glass model the section 11 comes within a few feet of the top of that raise, and instead of showing the roll, it shows a continuous dip downward from a point projected up the incline portion said to be the Osborne fault, and does not show that roll at all in that section.

Q. On the Stewart tunnel level, then, am I to understand you that

the course of the vein is disclosed by that long working along the footwall here from the bottom of raise 408?

A. In my opinion that is the course of the vein disclosed there for a distance of about 900 feet, and reaches to within about thirty feet of where plaintiff's map shows the Osborne fault to be.

Q. Mr. Porter, that is the highest level along which there has been any considerable working by the Stewart Mining Company other than the upper Stewart tunnel?

A. It is.

Q. What does the lowest working, the fir tunnel level,
1131 show with reference to the course of the vein; what is shown?

A. The course on the fir tunnel would be north 21 east for a distance of about 300 feet.

Witness excused.

(A recess was here taken.)

1132 Mr. FOLSOM: Let the record show that F. W. Galloway and Sidney Schontz were each sworn and qualified to testify in this case, and that each testified substantially as did W. H. Herrick.

Mr. GUNN: That is correct.

Mr. FOLSOM: That will be satisfactory, your honor?

The COURT: Yes, sir.

Mr. FOLSOM: This is simply for the purpose of diminishing the size of the record in so far as the weight of the evidence is concerned instead of calling them.

Mr. GUNN: We stipulate that the record may so show.

Mr. FOLSOM: There is another matter I neglected. I neglected to offer the exhibit that was identified in cnnection with Mr. Hershey's testimony this morning, the cross section; it was merely identified but was not formally admitted. I ask that that be admitted.

The COURT: What is the exhibit?

Mr. FOLSOM: I think it is exhibit "M."

The COURT: It will be admitted.

The said cross section was hereupon marked Defendants' Exhibit "M," admitted.

1133 Mr. GUNN: I am not so sure, may it please the court, that the exhibits used in the cross examination of Mr. Hershey were offered, and if agreeable I would like to have them considered as in evidence.

The COURT: They will be considered in evidence.

Mr. GUNN: If any be omitted, the record may show that whatever was referred to in the cross examination and identified are admitted?

The COURT: They are all admitted.

1134 FRED SEARLES, JR., called as a witness on behalf of the Defendant, being first duly sworn, testified as follows:

Direct examination.

By Mr. FOLSOM:

Q. State your full name to the reporter?
A. Fred Searles, Jr.
Q. Where do you reside?
A. I reside at Goldfield, Nevada.
Q. What is your occupation?
A. That of a geologist.
Q. What present position do you hold?
A. I am geologist for the Goldfield Consolidated Mining Company.
Q. Is that a producing mining company?
A. Yes, sir. The mine has produced about twenty-six million dollars in the last three years.
Q. I will ask you what school, if any, you graduated from—technical school, I mean.
A. I graduated from the University of California in the department of mining and geology.

1135 Q. What experience have you had since your graduation to fit you to testify in this case?

A. Since graduation I occupied a position as assistant instructor in geology and mineralogy in the University of California for about a year. I have since that time been engaged in the examination of mines, and mining properties throughout all of the western states and for the past year have been associated with the Goldfield Consolidated Mines Company.
Q. I will ask you if you have ever had an opportunity to study the veins in the Yreka mining district in this county?
A. I spent three months in the study of those veins in connection with the litigation between the Bunker Hill and Sullivan Mining & Concentrating Company and the Federal Mining & Smelting company about two years ago. Since that time I have spent altogether about a month or six weeks in the examination of the veins in that district.
Q. Are you familiar with the ore bodies in the Ontario and in the Stewart mines?
A. I am, yes, sir.

1136 Q. Beginning with the ores in the Ontario, describe what you saw briefly. Perhaps you had better use the model for that purpose?

A. Referring to the model, defendants' exhibit "L," I believe it is, I have been through and observed all of the openings within the lines of the Stewart and Ontario claims that are now accessible. In the course of observing those workings one of the things that I did was to map the vein along all of the drifts that are at present accessible and that are upon the vein, that is, to note the relation, of the vein to those drifts. Upon the third level of the

mine the vein is practically as shown in red upon the model defendants' exhibit "L." That is also true on the second level and of all the levels.

Q. I will ask you where the top of the Frank ore body is, top or apex of the Frank ore body?

A. I was just going to make one more statement.

Q. Just go on with your statement?

A. The mapping of the veins with relation to those levels exhibits the general course or strike of the vein. The three positions in the mine where that vein can be mapped most continuously without any interruption of any fault or magnitude worth noticing is upon the third level from the Osborne fault to the top
1137 of the Gray ore body. I have mapped the vein throughout that distance except that in a portion of the drift to which I now point, being southwesterly of the shaft upon the third level, the level is somewhat caved and I am not sure of the exact position of the vein. The strike of the vein as evidenced by its relation to that level is north 32 degrees east. Mapping the vein similarly on the second level from the point at which it begins to exhibit a marked change in strike due to its proximity to the so-called Osborne fault to the face of that level, or, I would say to a point where it is continued, is somewhat interrupted near the bottom of the raise under the stope which terminates in its upward course at raise 223 west. That distance on the vein is not much interrupted in strike by any considerable fault, and the strike of that portion is north 42 degrees east. Taking the vein on the old lower Stewart tunnel level from its southern extremity to the bottom of raise 4 east, which is the longest distance which the vein is uninterrupted in the mine, the strike is about north 33 degrees east. All of these distances represent lengths along the strike or the course of that vein from six to nine hundred feet. Taking the mean or
1138 average of these three strikes, I find the strike or general course of that vein, general strike or course of that vein to be north 35 degrees east. That is the best strike that I can give that vein, the best general strike as determined in the most logical way that I can see to determine it.

Now, as to the ore bodies within the limits of the Ontario claim. The Gray ore body is developed in the Gray drift for a distance of about 320 feet, and there has a strike of approximately *of* north 30 degrees east, and dips about 45 degrees to the southeast.

The Frank ore body has a strike of about north 38 degrees east, and a similar dip.

These ore bodies are separated by a fault which has been referred to as the No. 11 fault. If I were searching for the top of those ore bodies I should look in a direction about up the dip, and I would therefore suppose the top or apex of those ore bodies to be somewhere to the northwest partly within the lines of the Senator Stewart claim.

Q. Mr. Searles, referring now to the Gray ore body, I will ask you if it has an upper terminal edge against a fault?

1139 A. It has. The No. 11 fault before referred to cuts off the Gray ore body on its upward extension lying between

the Frank and the Gray ore bodies somewhat in the position in which I hold this paper (indicating).

Q. I will ask you if you can follow from that upper terminal edge in the direction of the Ontario west end line northerly and remain in the vein?

A. You cannot.

Q. I will ask you if you can follow on the upper terminal edge of the vein in the Gray northeasterly in the direction of the Ontario west end line, if you will be following downward or upward?

A. Please state that over again?

Q. If you follow from the upper terminal edge of the Gray ore body in the direction of the Ontario west end line in a northeasterly direction, whether you would be going downward or upward?

A. If you stay within the vein you will be going downward.

Q. I will ask you if there is any mineralization in the No. 11 fault above the vein as disclosed in the Gray stopes; I do
1140 not mean any mineralization, but any ore above the line which terminates upward against the fault?

A. There is none.

Q. Have you a cross section that illustrates—a cross section made through the west end line of the Ontario claim—I will show you a map first, and ask that this be marked defendant's exhibit "Q" for identification.

The sa-e cross section was thereupon marked Defendant's Exhibit "Q" for identification.

A. I refer to defendant's exhibit "Q" so marked for identification. This map exhibits the detail of the structure of the Ontario vein with relation to the claim lines which have just been called attention to. The red line between the letters "B" and "C" represent very approximately the intersection of the Gray ore body on its upward extension and the point at which it is cut off by the No. 11 fault or the line at which it is cut off. I will explain that it is not absolutely—that the intersection as it is in the ground may not absolutely coincide with this line, for the reason that there is rather a small number of points for which the actual in-
1141 tersection is visible within the claim; however, there is no question but what the intersection exists and that it is within a few feet of the red line as portrayed upon the defendant's exhibit "Q."

The line of intersection extends from the point "C" which is on the northwesterly end line of the Ontario claim, diagonally across that claim and passes out of the claim at the point "B" on the southerly side line.

Q. I will ask if you have a cross section through the west end line of the Ontario?

A. Yes, sir.

Mr. FOLSOM: Mark it defendant's exhibit "R" for identification.

The said cross section was thereupon marked Defendant's Exhibit "R" for identification.

Q. I show you defendant's exhibit "R" for identification and ask you who prepared that?

A. I did.

Q. Tell the court what it shows?

A. The cross section X-X1 on defendant's exhibit "R" is the projection or is the picture of a vertical plane passed through
1142 the northwesterly end line of the Ontario claim and extended beyond to a point X prime, having been started at the point X as shown upon this map, defendant's exhibit "Q."

Q. What is the blue marked No. 11 fault? Is that the same fault that has been referred to heretofore by you in the Ontario?

A. It is. The blue line labeled No. 11 fault upon this cross section represents the trace of that fault upon the vertical plane of the section. Similarly the red line labeled Stewart vein represents the trace of the Stewart vein upon this section. I will explain that as there is some lack of information about the position of this line of intersection between the No. 11 fault and the vein there is also some lack of data as regards the exact position of the Stewart vein on this section. That is to say, there are gaps between which we do not know the exact position of the vein because it has not been developed, but we do know by short projections that the vein exists there and that it exists within a few feet of the line as it is shown upon this cross section.

Q. You have something marked on the cross section
1143 "major Fault", which fault is that?

A. The major fault is the fault which has been referred to in this case as the Osborne fault. The cross section exhibits the upward termination of the Stewart vein against the No. 11 fault, its course downward from that termination in a line parallel to the northwesterly end line of the Ontario claim until it reaches finally its downward termination against the so-called Osborne fault. I might further say that any cross section passed parallel to the one here exhibited will show a similar downward course from the intersection of the No. 11 fault to the downward termination of the vein by the major or Osborne fault.

Mr. FOLSOM: Take the witness.

Cross-examination.

By Mr. GUNN:

Q. What year did you graduate, Mr. Searles?

A. 1909.

Q. You spoke about taking some courses of this vein and making an average of the courses?

A. Yes, sir.

Q. You took a course on the different levels as shown
1144 upon this model?

A. I did not include in that average all of the courses of all of the levels as shown upon that model, no.

Q. What levels did you take to get your average course as you gave it?

A. The third level, second level and lower Stewart tunnel level, choosing those because they exhibit the vein for the longest distance upon its strike.

Q. Step over here to the model a moment. I understood you to say that you took the course on the third level up to a point where the vein was influenced by the fault; is that correct?

A. Yes, sir.

Q. Mark that out on the model, will you please?

A. I took it about to the bottom of raise 312 east.

Q. About 312 east. And the same is true with reference to No. 2 level?

A. Yes, sir.

Q. Point out from what point you took your course on the No. 2 level?

A. I took it from about the bottom of the raise which is nearest the label D 205 East.

1145 Q. And on the lower Stewart tunnel level what point did you take your courses?

A. I took the course from the southern extremity of that level to the bottom of raise 4 east.

Q. Point it out on the model, please?

A. The southern extremity, the bottom of the irregular raise, to the bottom of raise 4 east. (Indicating on model).

Q. Have you taken any courses from the end of the No. 3 level to the line where that level would intersect the southerly side line of the Senator Stewart Fraction?

A. I have not.

Q. Can you take those courses and give it to us.

A. I can. Will you read that question again, please? (Question read) I find that the third level intersects the southerly sideline of the Senator Stewart Fraction at more than one place.

Q. Which course did you take in taking your general course?

A. I took the course through those levels which course intersected that side line of the Senator Stewart Fraction at the point

1146 where a line would intersect it drawn from the southern extremity of drift 313 west to the bottom of the raise which I mentioned, being raise 312 east.

Q. Then you took one general course through between those two points?

A. I did, yes, sir.

Q. You did not take any courses along the line of the level and make an average of those to get your average course?

A. I did not, no, sir.

Q. Well, are you able to give us the course from the end of the 300 level to the crossing of the southerly side line of the Senator Stewart fraction?

A. To which crossing—crossing by what?

Q. Well, where the vein crosses?

A. Yes, sir.

Mr. GRAY: Do you want it from the end of the level or from the end of the vein?

Mr. GUNN: From the end of the vein.

A. There might be two courses from the end of the vein on the—that is, the northeasterly end of the Stewart vein to the point where it crosses the side line of the Senator Stewart Fraction claim according as to whether the course is taken at the point where the hanging wall of the vein crosses or at the point where the footwall crosses.

1147

Q. Where did you take your course, on the points where the hanging wall of the vein crosses or the point where the footwall crosses?

A. I took from the end of the drift 314 west to the bottom of raise 312 east, both of which points are at places where the vein is not excessively wide and both of which points are approximately at the center of the vein or center of the ore streak.

Q. Well, take your course then just along the hanging wall and show the general course from the hanging wall at the point where you commenced to the hanging wall of the vein as it crosses the southerly side line of the Senator Stewart Fraction?

A. That course is about north 42½ degrees east.

Q. Now, take it along the footwall.

A. The course of a line joining the extremity, northeastern extremity of the Stewart vein on the third level, the point where the footwall of that vein crosses the side line of the Senator Stewart Fraction is about north 52 degrees east.

1148

Q. North 52 degrees east. Now, passing to the next level above, and give us the course from the end of the end of the vein as shown in that level with the southerly side line of the Senator Stewart Fraction?

A. The direction of a line joining the end, the northeastern end of the Stewart vein, on the second level to the point where that vein crosses the side line of the Senator Stewart Fraction is about north 59 degrees east.

Q. Now, pass to the next level above and give us the same information?

A. I have no information about the position of the vein on the next level above.

Q. Weren't you able to obtain that information from your observations in the ground?

A. No, sir.

Q. Why not?

A. Because the level was at all times inaccessible to me.

Q. Now, pass to the next level which you took?

A. That is the old lower Stewart tunnel level?

Q. Yes, sir.

A. What do you want?

1149

A. The same information?

A. The course of a line joining the extr-mity of the vein on the old lower Stewart tunnel level, the north eastern extremity to a point where that vein crosses underneath the side line of the Senator Stewart Fraction claim is north 69 degrees east.

Q. Now, are you able to give us the average strike according to the courses you have just taken?

A. Certainly not.

Mr. GRAY: I submit that cannot be done unless you take the vein where it is not faulted on the Stewart tunnel level.

A. I certainly am not. No one of those lines that I have given represents the strike of the vein.

Mr. GUNN:

Q. Does it not represent the strike of the vein within the surface boundaries of the Senator Stewart Fraction claim?

A. I think not.

Q. Supposing that you had no development of this claim to the south of the Senator Stewart Fraction claim, what would you say then with reference to those courses that you have just given us representing the strike of the vein?

1150 A. I should think that they did not represent the strike of the vein.

Q. Why not?

A. I will explain that, if I may? I would like a piece of paper. (Witness draws diagram.) I believe that if there were a vein or any other stratum of earth faulted so that it had the position shown on this diagram, being continuous from "A" to "B" then displaced by a fault, and again continuing from "C" to "D," that no geologist in determining the strike of that vein would take the course of a line from "A" to "D." Now, if this vein and the material within which it existed instead of being brittle was somewhat plastic so that the vein instead of being broken up in a sharp line had some such condition as from "A" to the point "G" and was then deformed by the fault to the point "E" and began again at "F" and curved around to "H" and then began its normal strike, I do not believe that any geologist would take the line from "A" to "E" as representing the strike of that vein any more than he would have taken the line from "A" to "D," and if erosion or any other force

1151 should remove the portion of the vein lying to the right of the irregular line I have drawn, I do not believe myself that the line joining the points "A" and "E" should be taken to represent the strike of that vein.

Q. What fault are you referring to that you find in those workings?

The COURT: If you want to use that or preserve it in the record, it had better be marked.

Mr. GRAY: Just mark that. We want to keep it.

The said drawing was thereupon marked Defendant's Exhibit "S," for identification.

Mr. GUNN:

Q. What fault were you referring to, Mr. Searles, in those workings that you think would influence the measurements to such an extent that the courses you have given us would not be the correct courses from a geological standpoint?

A. I refer to the fault that has been spoken of as the Osborne fault.

Q. Then your opinion is that from a geological standpoint in taking the course of his vein in the Senator Stewart Fraction claim that you should not take into consideration the turning or
1152 bending of the vein as caused by the fault?

A. If I were determining the strike of that vein and recognized the fact as I do recognize it that that vein is twisted locally by the presence of that fault, I should not consider a line joining those two points that you gave as indicating the strike of the vein.

Q. Suppose there had been no faulting there but that condition was found in the ground and there was nothing to show that it had been caused by any fault, what course would you take to show the strike of that vein?

A. If I could not determine any condition as having disturbed the position of the vein after its formation, I would take the course joining the two points on the vein most distant.

Q. Then ignoring the faulting and influencing of the vein by the fault, is it not true that the courses that you have given me are the correct courses of that vein within the surface boundaries of the Senator Stewart Fraction claim?

A. If you ignore the fault, that is not true. If you ignore the fault, the courses as given would not be as they are; the vein would not be so bent.

1153 Q. That is to say, you are taking into consideration that the bending was occasioned by the fault?

A. Yes, sir; that is what I mean.

Q. I am asking you to omit that from your consideration and assume that this condition exists in the ground and that there has been no faulting movement and there has been nothing to which you could attribute that bending?

Mr. GRAY: Wait a minute. Do you also assume that the vein does not continue——

Mr. GUNN: Just a moment. I think that the witness understands me, Mr. Gray.

Mr. GRAY: I do not know.

Mr. GUNN: You can conduct the examination after I am through.

The COURT: You can examine him after the cross examination.

A. You also assume that the vein terminates at the line that is there given?

Mr. GUNN:

Q. I am assuming that the vein has a termination at the points you have taken.

A. What is the question?

Q. Read the question. (Question read.)

1154 A. If I understand it right, you wish me to assume that there is a vein which has a bent course there and terminates along a certain line and yet that there is no apparent cause for that, either the bending or the termination?

Q. Yes.

A. Thereby assuming a case entirely different from that which exists in the ground.

Q. All right, we will assume a case entirely different?

A. If I could not see any reason whatever for that bend, I would take a line joining the points most distant from each other, that is, assuming also that the relative exposures, the relative lengths of exposures on the bent portion and on the normal portion have the same relative lengths that they have in this case.

Q. Then, in taking the course of any vein you study the geological causes for the position of the vein that it occupies and take those into consideration?

A. To a certain extent I do, yes, sir.

Q. Now, to what extent?

A. In so far as there are abnormal variations in the
1155 course of a vein which are plainly attributab*el* to an external cause, I would eliminate those irregularities or abnormal courses from the interpretation of the true course of that vein.

Q. Now, you have spoken of the No. 11 fault?

A. I have.

Q. In your opinion is the Gray ore body and the Frank ore body a part of the same vein?

A. In my opinion they are.

Q. Yes. And upon what do you base that opinion?

A. I base that opinion upon the general similar character of the two ore bodies and the fact that in certain parts of the vein the displacement between those ore bodies is small and of such a nature that it seems to me quite likely that they were originally parts of one vein that had been disturbed by some motion.

Q. In other words, Mr. Searles, there is evidence in the higher workings of the Stewart showing that the displacement has not intercepted the ore bodies; is not that true?

A. Has not separated them to any considerable distance.

Q. Yes, sir; so there is evidence to you as a geologist that
1156 those were once the same vein?

A. There is evidence, yes, sir.

Q. Now, what if any evidence have you of any vein that you can correlate with the Stewart vein beyond the Osborne fault?

A. None whatever.

Q. Then is it not a fact——

A. (Interrupting.) Beyond, you mean to the end of the footwall?

Q. Yes, sir.

A. None whatever.

Q. Now, will you mark on plaintiff's exhibit 1 the line of the cross section shown upon your exhibit "R"?

A. It is already marked in a general way.

Q. Just mark it with a dotted line.

A. It is approximately in that line as shown by the dotted blue line marked X-XI.

Q. Why did you place your cross section in that direction?

A. Because I followed the end line of the Ontario plane.

Q. What is the angle of intersection with the end line of
1157 the Senator Stewart Fraction as you have taken your cross section?

Mr. GRAY: The courses are right here on the map, exhibit "B."

A. Did you say the end line, Mr. Gunn?
Mr. GUNN: Yes, sir, with the easterly end line.
A. It makes an angle of about 24 degrees.
Q. Now, from the point where your cross section intersects what is designated on the map as 409 crosscut you have projected the vein, have you not?
A. I have.
Q. In a northeasterly direction?
A. Yes, sir. No, I have not projected it in a northeasterly direction. I projected it in a southeasterly direction.
Q. Well, all right. What is the distance of your projection?
A. It is in the neighborhood of about forty feet.
Q. About forty feet?
A. Yes, sir.
Q. Well, what data did you obtain to locate the vein?
A. I projected it downward upon its dip from the position
1158 in the fir tunnel.
Q. Whereabouts in the fir tunnel did you find the vein which you took?
A. Part of the vein which I project was from about L 5103 to L 5151, the projection being this way on the dip. (*indicating.*)
The COURT: Mr. Folsom, do you want to introduce that plan map?
Mr. FOLSOM: Yes, sir, I do, both the plan map and the cross-section. I offer them in evidence.
The COURT: They will be admitted.

Thereupon the said plan map and cross section were marked Defendant's Exhibit "Q" and Defendant's Exhibit "R," admitted.

Thereupon an adjournment was taken until tomorrow, Wednesday, January 15, 1913, at 10:00 o'clock a. m.

10 A. M. WEDNESDAY, *January* 15, 1913.

1159 FRED SEARLES, JR., resumed the stand for further Cross-examination.

By Mr. GUNN:

Q. Directing your attention to this cross section, Mr. Searles, if you had extended your cross section through the southwest corner of the Ontario claim, you would have shown the Frank ore body as well as the Gray ore body, would you not?
A. Yes, sir.
Q. And what relation would the Frank ore body bear with reference to the vein as disclosed upon this cross section if the cross section had been extended through so as to show the Frank ore body?

A. It would bear no relation to it as exhibited in the section.

Q. Where would the cross section, as it cut the Frank ore body be shown upon that cross section?

A. It would be shown standing above the No. 11 fault. The displacement along the fault as exhibited in this cross section is about 160 feet.

1160 Q. Can you indicate on this cross section about where the Frank ore body would appear?

A. Yes. The section would cut the Frank ore body in some such position as shown by the pencil lines above the No. 11 fault.

Q. Just make a mark there on the line that you have put on there so as to designate it in the record, Mr. Searles?

A. I have made a letter as the point "F."

Q. Now, I understand that the vein as disclosed here, near what you have designated as the major fault is a projection?

A. It is a projection, yes.

Q. You did not intend this connection between the vein and the fault to represent a picture of anything that you have seen in the ground, did you?

A. Why, I think it represents a picture in a way; I have not seen the exact point at which the vein intersects the fault.

Q. Well, you have not seen the relation of the vein to the fault at the place of intersection?

A. I have not at that place.

1161 Q. Now, is it not true, Mr. Searles, that a cross section taken through these working- between a point below any level and a point above a level would show an upper portion of the vein?

A. If the level were upon the vein, a section through the level at any direction other than the strike of the vein would exhibit the inclination of the vein.

Q. That is to say, at any point in these workings, if you take a cross section from a point below the level to a point above the level, assuming the level is on the vein, would it show the upward course of the vein?

A. That is true. For instance, if a cross section were taken from a point where the line which is called the apex crosses the end line of the Stewart Fraction, to any part of an area near where this apex under the No. 11 fault crosses the Ontario end line, it would show an upward course from that Stewart so called apex to the Ontario.

Q. And the same with reference to the No. 3 level?

Mr. DINES: I don't think you understood his answer, Mr. Gunn.

Mr. GUNN: May I have the answer read.

(Answer read.)

1162 Q. Do I understand you to say that it would show an upward course for the entire distance.

A. No, sir. I mean that the elevation, however, at the apex under the No. 11 fault would be higher than the elevation at which the so called apex crosses the end line of the Senator Stewart Fraction.

Q. But you don't mean to say that such a cross section would not show a downward course from the apex for a distance?

A. Which apex?

Q. Well, the crossing of what you spoke of as the apex crossing the easterly end line of the Senator Stewart Fraction?

A. Yes, except that I have not spoken of that as an apex.

Q. Well, from that point, taking a cross section such as you have along the lines you have indicated, you don't pretend to say but what that would show a downward course of the vein for a distance?

A. It would for a short distance.

Q. If you should take a cross section from a point below No. 3 level to a point above No. 3 level it would show an upward course of the vein, would it not?

1163 A. Yes.

Redirect examination.

By Mr. FOLSOM:

Q. Mr. Searles, Mr. Gunn has asked you if there was any ore or vein beyond the major fault that could be correlated with this which he called the apex against the major fault. I will ask you whether there is any comparison between the apex against the No. 11 fault which you have described and the apex against the Clancy fault?

A. I should say that the upper edge of the vein under the No. 11 fault compared very favorably with the so called apex of the vein under the Clancy fault, and contrasted very favorably with the so called apex, which is the edge of the vein against the Osborne fault. Within the lines of the Ontario claim there is a very considerable displacement between the Gray stope and the Frank stope, and as far as can be ascertained within the lines of that claim, the upward termination of the Gray ore body against the No. 11 fault is a final termination, and there is no doubt at all in my mind that the displacement upon the No. 11 fault in that claim is a greater displacement than has occurred on the Clancy fault. My reason for that belief is in a small part a comparison of the gouge or

1164 trace which the two faults have left in the ground. The No. 11 fault at all points that I have observed it carries from three to five inches of a very good plastic, tenacious, streaky gouge, which is usually indicative of a considerable movement, and the movement as indicated by the character of that gouge is at least as good as that on the Clancy fault. But a much better reason for believing that the movement upon the No. 11 fault is greater than that upon the Clancy fault is exhibited by the model. We have in the upper Stewart tunnel a development upon the vein very similar to the Stewart vein for a distance of three or four hundred feet, and I have no doubt that that is the same vein as has been called the Stewart vein as it exists throughout the major part of these workings. I think that that is largely a matter of common sense, that this mountain is not full of veins; there are not numerous veins ramifying through this mountain. There and thousands and thousands of workings that cross them, and these mountains do not

exhibit many veins, and when I find a short distance above the Stewart vein a vein similar to it, having a parallel strike and a similar dip as shown by the model, there is very, very little
1165 doubt in my mind that that vein is the same as that in the rest of the Stewart workings. The only difference that I can see between the two faults is that the Ontario Company have the continuation of the ore beyond the No. 11 fault, whereas the Stewart Company have not been so fortunate in regard to the ore above the Clancy fault. The ayparent ease with which the Frank body was found after the Gray ore body had been cut off is largely due to the intimate knowledge of the geological structures that this company have had, the Ontario Company were able to take advantage of, and there is very little doubt in my mind that if Mr. Hershey had the direction of the same amount of work as has disclosed the Frank ore body, that he would discover a continuous vein, or discover the exact position to which the vein could be broken, so that it could be positively correlated with the vein in the upper Stewart tunnel.

Q. I will ask you, Mr. Searles, if there is any part of the Stewart vein northeast of the part where it last appears on the Fir tunnel level?

A. There is.

Q. Where?

A. If you take a line anywhere through the central por-
1166 tion of this mine,, which is parallel in direction to the direction of the dip, you can proceed from that line further upon the strike of the vein at the elevation of the Siligo tunnel than you can at the elevation of the Fir tunnel.

Q. Why did you make the cross section so as to show so little of the Stewart workings?

9. I made the *corss* section in the position that I did, because it was on the Ontario end line and showed the poition of the vein in a plane, the trace of which is coincident with the Ontario end line. I took that position rather than a parallel position further to the southeast, because that section passes through more workings. I could have taken any section parallel, within the Ontario, showing a similar downward course from the apex under the No. 11 fault, to the downward termination of the vein against the major fault, and I could also have taken a parallel section within the Stewart workings, which would show more workings upon the section and therefore give the exact position of the vein in greater detail than it is exhibited by this section, Defendant's Exhibit B, but as regards this particular apex, I was concerned only with the ground under the Ontario claim.

1167 Mr. FOLSOM: I desire to ask one question which I am not sure is re-direct.

Mr. GUNN: I doubt if a lot of this is really re-direct, but it is all right.

Mr. FOLSOM: Well, I will ask leave to ask this question.

Mr. GUNN: All right.

Q. Calling your attention to the apex map, Plaintiff's Exhibit

No. 3, I will ask you this question; would the angle in a horizontal plane between the strike of the vein and the line of intersection between the vein and the fault be different when measured in the plane of the vein?

A. It would be different. Do you wish me to explain that?

Q. Yes. Explain that.

A. (Drawing diagram marked Defendant's Exhibit "T") If you had a given direction of a course of a line on the horizontal, and that intersected another line upon the horizontal, as for instance the line A, B intersects the line BD at some angle, which I have here taken as 70 degrees—this is purely a supposititious case—a vertical plane passed through that line would of course have a strike equal to the course of the horizontal projection of the line,
1168 —I will call this inclined plane as pictured here H—the vertical plane through the line AB will intersect the plane H through the line AD. I understand the question is to exhibit the relation between the angle alpha, which would be the angle as measured upon the inclined plane between the strike of that plane and the trace upon that plane of a vertical plane through the line AB to the angle made by the strike of that plane on the horizontal projection. I don't know whether it will be necessary to go through all the algebra and trigonometry here, or simply to state the relation of that angle alpha to the angle of 70 degrees.

Q. Oh, just state it.

A. The relation of the angle alpha to the angle of 70 degrees is such that the tangent of alpha is equal to the tangent of 70 degrees divided by the cosine of the angle delta, which is the dip of the inclined plane. That can be mathematically demonstrated, if you care to have it done.

Q. No, it is not necessary.

A. But certain inferences may be drawn from that formula, namely, that the angle in the plane between the strike of the plane and the projection of the line or trace of the line upon that plane will be larger than the angle in the horizontal plane, because
1169 the cosine of an angle is always less than one. But that will be true as long as the angle is an acute angle, because when an angle becomes an obtuse angle, the tangent becomes negative; so, so long as the angle is acute, the angle measured in the incline plane will be greater than the angle as measured in the horizontal plane, but as that angle approaches 90 degrees, as it becomes close to 90 degrees, the difference between the angle in the horizontal plane and the angle in the inclined plane will be less, because as the angle approaches 90 degrees, the tangents of both angles become very great, and the difference made by dividing by the cosine of the dip will become smaller and smaller, until as the angle reaches 90 degrees, the tangent of both angles is infinity, and the division by the cosine amounts to nothing, and the angle is unchanged from the horizontal plane with the inclined plane; that is to say, that if the angle is less than 90 degrees in the horizontal plane, it will always be less than 90 degrees in the inclined plane, that the projection can never change it past the 90 degree mark. I think that

is obvious, that in an inclined plane, if you have one line in the direction of the strike of the plane, and the other in the
1170 direction of the dip, that that angle will be the same projected into the horizontal plane as it is in the inclined plane, but in any acute angle the angle would be greater as measured in the inclined plane than it would in the horizontal. However, that can never be changed past the 90 degree mark.

1171 Recross-examination.

By Mr. GUNN:

Q. With reference to this No. 11 fault, you have positive evidence in the workings, have you not, that the sections of the vein on both sides of that fault are one and part of the same vein?

A. I do not think there is positive evidence. I believe very strongly that they are the same, but I would be unwilling to go on record that it is an undoubted fact. There is one reason for that that has not been exactly brought out; the displacement upon the No. 11 fault measured upon a horizontal plane at the elevation of the Silver King tunnel is about 140 feet; the corresponding displacement as measured upon the elevation of the No. 3 tunnel is 180 feet; in other words, the displacement seems to be becoming larger as you go upward in the mine. As you follow out upon the second level you come to a fault that is not parallel either in strike or dip to the No. 11 fault and corresponds somewhat with its position and is probably a representative part of the movement upon the No. 11 fault, but a strange thing about that fault is that the displacement upon
1172 it as shown in here is very small, it is only 130 feet, as I remember. Now, I have difficulty in seeing how the displacement upon the Silver King level is 140 feet and becomes 180 feet on the third level and then decreases again to only about thirty feet a short distance above it, so I cannot conceive of how the motion on that fault could have taken place to bring that about, so I arrive at the conclusion that the fault divides somewhere between the second and third levels, and that the larger part of the movement upon that fault is done up there by a fault which is shown in the second level in the neighborhood of D 205 west; and that is a crooked fault and the movement upon it is in such a way that the portion of the block on the hanging wall of that fault slid down on the footwall of the fault, so that the movement was nearly parallel to the strike of the vein at that point; and still I believe that there is a very considerable movement on that fault and in the upper level is to be correlated with what has been called the Deering fault, and I recognize in the neighborhood of the level D 205 west a faulted condition of the vein; there some ore strung that fault, so that in a casual observation of that level it might not be noticed readily that the
1173 vein in that level is displaced, but I believe it is displaced and I believe there is a continuous gap from the gap shown on the Silver King tunnel level to the gap as exhibited on the stope map in defendant's exhibit 2 on the old lower Stewart tunnel.

Q. I believe you have stated on your direct examination that those

ore bodies, the Frank and the Gray and the May, are one and the same vein?

A. I believe they are.

Q. Isn't it true that along the line of that fault above the 200 level you can follow on continuous ore from one side to the other?

A. I have not been able to do so.

Q. Have you been in there looking at it?

A. Yes, sir, in all of its accessible portions.

Q. Isn't it true that there has been stoping right *right* through that level——

A. Yes, sir.

Q. On ore?

A. There is a jog in the stopes above the second level there, and at all times that I have been in there it was impossible to pass from one side of that level to the other on ore. However, I believe
1174 the dislocation in there is very slight.

Q. Have you the same evidence that the vein shown in the upper Stewart tunnel is the continuation of the Stewart vein as you have that the vein on both sides of the No. 11 fault is the same vein?

A. I have just as good evidence in my mind.

Q. That is, in your mind, from the standpoint of a geologist?

A. Yes, sir.

Q. What have you to say as to this vein disclosed as the old lower Stewart tunnel here immediately under the word "Senator" on this model being a part of the Stewart vein?

A. I believe it is a part of the Stewart vein.

Q. You believe it is a part of the Stewart vein?

A. Yes, sir.

Q. And that vein has a strike nearly east and west, has it not?

A. It is very difficult to take the strike of that vein on account of its extreme flatness.

Q. As it shows on this model you would assume it to be east and west, wouldn't you, or easterly?

A. I might if I had not been in the ground, but I have
1175 been in the ground and I know that the vein is very flat, and I can conceive readily of the possibility of the strike being at a right angle to the workings shown in there.

Q. Did you take any strikes of that vein in the ground?

A. I could not say as to that. I will look in my notes. (After examining notes.) I have several observations as to the dip, but none as to the strike because any observation that I have been able to make in the strike would be very inaccurate due to the extreme flatness of the vein.

Mr. GUNN: That is all.

Witness excused.

Mr. GRAY: One matter I desire to call attention to. I do not know that the tracing we have used so frequently here has ever been marked.

The said tracing was thereupon offered and received in evidence without objection and marked Defendant's Exhibit "V," admitted.

1176 STANLY A. EASTON, called as a witness on behalf of the Defendants, being first duly sworn, testified as follows:

Direct examination.

By Mr. GRAY:

Q. Will you state your name, residence and your occupation?

A. My name is Stanly A. Easton; I reside at Kellogg, Idaho; and I am manager of the Ontario Mining Company.

Q. How long have you followed the occupation of miner, Mr. Easton, a practical miner?

A. I have been engaged solely in the occupation of mining for twenty-two years.

Q. During that time have you operated and engaged in operating producing mines?

A. I have.

Q. And developing properties?

A. Both producing and properties in the stage of development work.

Q. Are you acquainted with the Ontario mine in the Yreka mining district?

1177 A. I first became acquainted and interested in the Ontario property in July, 1905.

Q. State your acquaintance with it from that time on?

A. It has been continuous, and under my direction has been done nearly all of the development work on the property. Prior to my connection with it there had been several hundred feet of development work in the upper levels of the mine performed by the very early operators, and everything else on the property has been done under my personal direction.

Q. You say you became acquainted with it in 1905, became interested in it at that time. Did you — any work toward the development of that property at that time, and if so, approximately what was it?

A. The development of the property was continuous until the winter of 1907. Our operations did not result in our producing any profitable ore, and the general depression of business in the winter of 1907 and the fact that further development work in depth would require the outlay of a large sum of money required us to close the property for a period of four years. Mr. Bourne, the owner of the property, was reluctant to advance further money.

1178 Mr. DINES: We submit, your honor, that this is absolutely immaterial here to the questions in issue.

The COURT: I think so.

Mr. GRAY: It is simply in connection with this property——

Mr. DINES: Yes, but he is talking about other things, and we move to strike it, all as to the financial depression and Mr. Bourne not being willing to advance further money. What have we to do with that?

Mr. GRAY: Your honor can see in just a moment; I assure you it is material and competent, and if I do not show it——

The COURT: Yes, I will reserve the motion to strike to see whether it is material.

Mr. GRAY: Yes, sir.

A. And I thereupon negotiated with him to arrange some scheme by which I would not only direct the development of the mine but also arrange the financial resources to pursue its development work, and these negotiations were rather expensive and resulted in his giving me a lease of the Ontario and the Ontario Fraction claims.

1179 One of the considerations of this lease was my relinquishment of my equitable interests in the properties which up to that time I had held.

Mr. DINES: We object to that also and move to strike it out, as on its face immaterial and cannot be made material.

Mr. GRAY: His honor suggested that he will entertain your motion later.

Mr. DINES: I understand.

The COURT: I will still hear further. Your motion is in abeyance, Mr. Dines.

Mr. DINES: Yes.

Mr. GRAY:

Q. When was that?

A. The lease was executed in April, 1911.

Q. What did you do then with the lease?

A. I immediately transferred this lease to the Ontario Mining Company. The enterprise required vastly greater resources than I had at my personal command, and I formed the Ontario Mining Company and transferred the lease to this corporation, and interested a number of my friends in the financing of the corporation, which was accomplished and plans for developing the property were then considered.

1180 Q. What plans did you first consider in connection with its development, and how came you to develop it in the manner in which it has been developed through the Silver King tunnel?

A. The former development of the property was all from Deadwood Gulch.

Q. That is where Mr. Easton?

A. On the model it can be shown as this slope of the mountain. The former development work was done by an adit run in the position which I hold my pointer, from the lower side line of the Ontario claim and it was the lowest level from which the ground could be reached from the Ontario surface and from Deadwood gulch. While we were discussing and planning how further to develope the ground I was in attendance in this court at a hearing in which the Stewart Mining Company and the Cœur d'Alene Development Company were concerned, and from the maps placed in exhibit in that hearing I for the first time learned that the face of the Silver King tunnel extension was in a few feet of the Ontario lines. It shows on this map here, Mr. Gray, a distance of some 160 feet. The Silver

King tunnel was quite inaccessible, caved and closed, and that was the first time I learned it had been extended to that point.

1181 Thereupon I negotiated with the Cœur d'Alene Development company for the use of that tunnel to reach the Ontario ground, and an arrangement was concluded with them and we began to clean out and repair the tunnel which was caved from its portal. In due time we reached the face of the Silver King tunnel extension which is beneath the surface of the Senator Stewart claim and as a result of various negotiations we paid ten thousand dollars to the Stewart Mining Company for a half interest in the Silver King tunnel beneath their surface.

Q. You say "We"?

A. Well, I was going to add that five thousand dollars of this sum was paid by the Ontario Mining Company and five thousand by the Bunker Hill & Sullivan Company who desired to have a joint interest in this working which reached ground contiguous to the Ontario which was the property of that company. Thereupon the extension of this tunnel was begun at the face of the Silver King tunnel; a crosscut was extended into the Ontario ground and the Gray ore body—I say "Gray ore body," Gray vein, because it was not commercial ore at that point—was cut October 4, 1911.

1182 Q. Just stop there a moment. Prior to acquiring by purchase from the Stewart Mining Company a joint interest in so much of the tunnel as lay beneath the Senator Stewart claim had any objection been made by the Stewart Mining Company, and did the Stewart Mining Company or its officers know or were they advised of the work which was being done there?

A. They inspected the work one time during my absence.

Q. "They"; whom do you mean?

A. The Stewart Mining Company's officials; and they subsequently directed an objection against the Cœur d'Alene Development Company, but not against the Ontario Company.

Q. Now, you may proceed from the time you struck the Gray vein?

Mr. DINES: One moment, your honor. I wish to suggest to the court that it is evident that if this has any purpose at all, it is an effort to inject into this case what has never been pleaded; that is, an estoppel in pais.

Mr. GRAY: Oh, no.

Mr. DINES: If it is not that, it is nothing whatever; it is absolutely immaterial on its face, if it is not in support of an

1183 estoppel, it is absolutely immaterial for any purpose; it throws no light upon the issues and the purposes of showing that *the* purchased an interest in that tunnel from the Stewart Mining Company can only be directed to one thing, and that is, an estoppel, and that is not pleaded; otherwise it is immaterial.

Mr. GRAY: No.

The COURT: It will not be considered as an estoppel, because it could not be. It may be considered as immaterial, but I think I will listen to the merits of this case. Mr. Dines, I think it is about as

immaterial as the other matter to which you objected and moved to strike out.

Mr. GRAY: If your honor please, the purpose of introducing this testimony, I may fairly say to you at this time, was that counsel for the plaintiff have seen fit to introduce upon this stand a witness whose testimony literally read might indicate that Mr. Easton and the Ontario Mining Company had slipped in there in the night time and had surreptitiously removed ore from some ground under the cover of darkness, and I will proceed to show that they have been fully aware at all times of the operations, and that the inferences which were sought to be interjected into this case by that testi-
1184 mony which I did not consider material particularly at the time, are unfair and unjust and untrue.

Mr. GUNN: Of course the rule is well settled that the introduction of immaterial testimony does not authorize the introduction of further immaterial testimony to rebut it.

The COURT: That is very true.

Mr. GUNN: And Mr. Gray now takes the position that the testimony that we introduced which was introduced without objection is wholly immaterial.

Mr. GRAY: I did not say it was not proper, but I was quite willing to concede to your better judgment as to what was material testimony and concluded that instead of objecting to it we would meet it.

Mr. FOLSOM: It all goes to the wilfulness of the trespass.

The COURT: I will hear it.

Mr. GRAY: You may proceed, Mr. Easton?

A. The fissure which later developed into the Gray ore body was cut on the 4th of October and our crosscut was continued. We did not at that time recognize the importance of this fissure and
1185 we continued the crosscut and also drifted upon this fissure which at the point cut carried a small amount of ore only. The ore improved steadily as we went south until at the northern portion of what is now the Gray stope we found the commercial ore, and production began sometime in December. The Stewart people, I will say, asked me to inspect their mine and their officials were in this tunnel. Mr. Beaudry accompanied by myself inspected this discovery less — a month after it was made, and in return I was with him through the Stewart mine sometime early in the following December, and at all times was there an interchange of hospitality in that particular; they had been in our property and we had been in theirs and the work continued. We found the Gray ore terminating to the south on the Silver King tunnel level, and by crosscutting in the footwall encountered the Frank ore body, from both of which stopes production has continued until now. We furthermore sank the Ontario shaft; we crosscut on the two lower levels, and spent not less than——

Mr. GUNN: We object to the amount that has been spent in this matter. That is absolutely immaterial.

1186 The COURT: I do not think that is material.

Mr. GUNN: It is going clearly beyond the bounds indicated by the court or by counsel.

Mr. GRAY: All right.

Q. Mr. Easton, you said something about visiting the Stewart mine and inspecting it and interchanging maps. Were you furnished with a map by Mr. Bacon at that time of their workds directed toward the southerly——

A. The first time I visited the Stewart mine in recent years in October of 1911, some two weeks after we cut the Gray ore, I had not been in the Stewart mine before that since 1908. About February of 1912 it appeared to me that the Stewart Company were extending a level, a drift, into our ground, and I called upon Mr. Bacon and suggested that he show me his maps. After some discussion he produced them and it appeared that their 300 foot level was being extended well beneath the Ontario surface and not upon any vein. I remonstrated with him against this trespass and suggested that an interchange of maps would possibly avoid any legal action by either party, particularly by the Ontario Company, to resist this trespass by their workings into our ground. Some days later he
1187 called at my office with a map showing the workings of the Stewart Company adjacent to the Ontario, and on the same day I visited the Stewart mine with him and we went out on the 300 foot level to the point beneath the surface of the Ontario and at a point some 200 feet from any property of the Stewart Mining Company, and I told him that it would be necessary for him to stop that work. We finally agreed that if he would turn that tunnel back into his own ground again that no action would be taken by us, we would permit him to pass through there and have a right of way, but he should continue it no longer in our ground. The tunnel was turned as shown upon this map——

Q. As W 318 cross cut?

A. Yes, sir, W 318 crosscut, back into the—here (indicating) was the point visited by Mr. Bacon and myself February 21, 1912, and this is the course of the drift subsequently taken by him back into his own ground. We had prior to that time exposed the Frank ore body and from our maps the Stewart Company were apprised of the location of this ore body and they extended this "D" 305 west drift and cut this ore body on that 300 foot level. I saw for the first time last October when maps were introduced at the injunction
1188 hearing——

Q. That is, October, 1912?

A. 1912,—that in addition to these workings a crosscut had been extended by the Senator Stewart Company unknown to me and through barren ground intersecting the vein above the Gray stope.

Q. In the Ontario ground?

A. Yes; some 150 feet south of the Ontario northwest end line well beneath the surface of the Ontario, and a raise had been extended by the Stewart Company on this vein for upwards of sixty feet, and that a considerable amount of ore was removed by the Stewart Company from this raise and milled—shipped. This crosscut was subsequently tightly closed by lagging, although the timbers were not broken down, it was completely filled with muck and dirt, and Mr.

Porter and I located it by a careful inspection and it was subsequently opened.

Q. And you found it extended over and had some ore within the Ontario above the Gray?

A. Above the Gray stope. The raise itself was inaccessible.

Q. Where you had disclosed ore by your workings?

1189 A. Where we had previously disclosed ore by our Silver King tunnel workings and our Gray stope.

Q. Yes, sir. Mr. Easton, at the time you visited the Stewart after having acquired this Silver King tunnel for this Ontario Company did you go to the south faces of the several levels that were open and accessible?

A. On my first visit the 300 foot level was not open. This shaft from the 200 foot level was in process of sinking. I went to the south face of the 200, and subsequently went to the 300 foot level and to the south face of the 300 which was then about at that point.

Q. That is the point, station 5186?

A. I think that is L5125, somewheres in there. That face was not being advanced at that time, was in barren ground, and there was no working nearer our development than at least 300 feet horizontally and over 100 feet vertically, and that working did not show any ore so that our development here was in no wise dependent upon any information that was received from the development in the Stewart mine either directly or indirectly.

1190 Q. After having opened up the Gray ore body, you then opened up the May and Frank ore bodies?

A. Yes, and from them other work has been carried on on a rather broad scale. We have done development work for many years ahead, and the whole operation has been conducted as a permanent and substantial enterprise.

Mr. DINES: We move that that portion of the witness' testimony in relation to the plaintiff having trespassed, including the witness' designation of that as a trespass, and all references to it, be stricken from the record on the ground that it injects here issues that cannot be adjudicated in this case and that do not relate to any issues in this case.

Plaintiff further moves to strike out the witness' opinion and conclusions that their company has been conducted on a broad basis as a permanent substantial enterprise, if I quote him correctly. Your honor will recall the expression, I object on the ground that it is merely a conclusion, and states no facts.

Mr. GRAY: I have no objection to the last part being stricken out, but to the first motion I do object, and I want to again recall your honor's attention to the attempt which the plaintiff made in

1191 the early part of this case to prejudice your honor by producing Mr. Bacon on the stand and having him testify that the developments in the Ontario were absolutely without his knowledge or his permission, and to suggest to your honor that the development of these ore bodies was because of certain workings in the Stewart property which theretofore the Stewart Company had

run out in that direction. Now, all of this goes to show that, on the contrary, these ore bodies were developed by the indepenent judgment and investigation and expenditure of the defendant company, and that if there has been any information gained by either, it has been the information which the Stewart Company acquired from the development of these ore bodies, and that prior to their development they had not extended their work over in that neighborhood or for a long distance therefrom, and that at their southerly faces those works showed nothing but ore of no quality or value. I think that, they having opened up this question, we are perfectly justified and within the law in meeting it.

Mr. DINES: May it please the court, I think that counsel has indulged somewhat in imagination as to the testimony in this case——

1192 THE COURT: I think, Mr. Dines, that we do not need any further argument. I am inclined to sustain your motion as to the matter of trespass, but I shall let the narrative stand as to any work that was done.

Mr. GUNN: I object to the insinuation of counsel that the testimony of Mr. Bacon was introduced here for the purpose of prejudicing the mind of this court.

THE COURT: You don't need to bother about that. It did not prejudice my mind anyway.

Mr. DINES: We further suggest that it is shown by the witness' testimony that when the vein was cut and ore was opened there, the Stewart Company did not know that the Ontario was mining, that he complained against the Cœur d'Alene Development Company, thinking that that company was doing this work. That is the best possible evidence that we did not know of it.

THE COURT: I don't need any more argument.

Q. At that time when they made the objection to the Cœur d'Alene Company, had this work extended to the vein?

A. I had just gone from the Silver King tunnel level; that was long prior to cutting the ore.

Q. And that objection was obviated by the payment of Ten Thousand Dollars to the Stewart Mining Company?

1193 A. Yes, sir.

Mr. DINES: We have a motion also directed to that which I don't think your honor has passed upon. We move to exclude from the record all evidence as to the payment of money, of Ten Thousand Dollars for the tunnel.

(Motion denied. Plaintiff excepted.)

Q. Mr. Easton, you have been familiar with the development of the Ontario mine and the ore bodies within that mine from the time the Ontario Company commenced its work?

A. In great detail, yes, sir.

Q. It has all been under your supervision?

A. Yes, sir.

Q. Will you state to the court, from your acquaintance with the defendants' ore bodies within the Ontario mine and your familiarity

with them, what the strike and dip of those veins or ore bodies, as disclosed by your workings, is?

A. The strike of the Gray ore body going south, which was the direction followed in the development, was constantly south 30 degrees west. The May ore body is south 32 or 34 degrees west and the Frank ore body is south 38 degrees west. The dip in all cases being at right angles to the strike was at an angle of 45
1194 degrees from a right angle, more or less.

Q. To the southeast?

A. To the southeast.

Cross-examination.

By Mr. GUNN:

Q. Mr. Easton, you spoke of having a lease of the Ontario, which you transferred?

A. I did.

Q. Have you that lease with you?

A. No, sir.

Mr. GUNN: We would like to have an inspection of that lease.

Mr. FOLSOM: It is on record downstairs.

Mr. GUNN: Oh, very well.

Q. Now, with reference to this Silver King tunnel, is it not a fact that you entered into the Silver King tunnel beneath the surface of the Stewart claim and commenced the extension of that tunnel without the consent of the Sewart Mining Company?

A. Yes.

Q. You have directed all of the operations of the Ontario
1195 Company?

A. I have.

Q. You have been in full charge?

A. I have.

Q. You have given instructions where to mine ore and how to mine ore?

A. Yes.

Q. And have you had any meetings of your Board of Directors with reference to the mining operations in the ground, and have those had anything to do with the mining operations in the ground?

A. I don't know as I understand the question. We have meetings occasionally, but I do not consult them as to the details of the work.

Q. You don't consult them with reference to where you should mine or how you should mine?

A. No.

Redirect examination.

By Mr. GRAY:

Q. Mr. Easton, counsel asked you if you commenced extending that tunnel without the consent of the Stewart Company,
1196 and you said you had?

A. Yes, I did.

Q. Will you just explain what position you took in that?

A. I discussed the situation with my attorney, and I furthermore knew that it has been customary in this district to permit companies to extend tunnels through their ground——

Mr. DINES: We object to that and ask that it be excluded from the record, what is customary.

Mr. GRAY: It is customary, Mr. Dines, no one has ever made any objection in this country but once.

Mr. DINES: I don't dispute the facts, but my objection is that the custom does not control.

The COURT: Oh no, I think that will be conceded.

Mr. GRAY: Yes, sir.

The COURT: I will overrule the objection. Of course custom won't control the law. (Plaintiff excepts.)

Mr. GRAY: No, it simply shows his motive.

A. (continued). That it was customary to permit right of way through ground where no damage has been done and where no interference is made with the operations of the owner. I
1197 was also informed that if objections were brought up by the owner, condemnation proceedings could be successfully instituted for this right of way, and I was furthermore informed by the Coeur d'Alene Development Company that they claimed an equitable interest in this particular tunnel.

Mr. DINES: We move to strike that out as hearsay, both as his interesting conversations with his counsel and the conversations with the Coeur d'Alene Development Company.

Mr. GRAY: It is simply to show his motives.

Mr. DINES: It is hearsay.

The COURT: It is hearsay but it explains the motive in making the entry, which have been impugned on the cross examination. I shall deny the motion.

(Plaintiff excepts.)

Recross-examination.

By Mr. GUNN:

Q. It is the custom, also, when you seek a right of way through another man's ground, to ask him for permission before you enter upon it and commit a trespass, is it not?

A. I have granted right of way and no permission was ever asked.

1198 Q. That is not the question. I asked you if it is not customary.

A. Not always.

Q. Where one wants a right of way through another man's ground, to obtain his permission before entering upon the ground to make use of that right of way?

A. I don't think it is customary absolutely.

Witness excused.

1199 MAX BOEHMER, after being duly sworn as a witness for defendant, testified as follows:

Direct examination.

By Mr. GRAY:

Q. Will you state your name, your residence and your occupation?

A. My name is Max Boehmer, I live in Denver, Colorado, and I am a mining engineer by profession.

Q. Where and when did you study for the profession which you have followed, and what experience have you had in the practice thereof as an engineer or as a practical miner or an operator, and where?

A. I studied at the Polytechnic Institute, in Hanover, Germany. I have practiced as a mining engineer for the last 33 or 34 years. During that time I have lived in Colorado; the first 18 years in Leadville and the last 15 years in Denver. I am quite familiar with nearly all of the mining districts in Colorado and Utah. I have examined a number of mines in all the western mining states,
and a few in Canada,—Ontario—and some in Mexico. I
1200 have done some mining on my own account. I am and have
been consulting engineer for several companies, and I am now still consulting engineer and have been for 15 years for the Portland Mining Company in Cripple Creek, Colorado, and for a short time I had charge of Stratton's Independence Mine in the same district.

Q. Mr. Boehmer, are you acquainted with the mines or veins or properties situated in the Yreka Mining District?

A. Yes, sir. I have spent about a month in that district examining several mines, and about two weeks in this particular property, the Stewart and the Ontario.

Q. You have then examined and are familiar with the Ontario mine and workings and the Stewart mine and its workings?

A. Yes, I am quite familiar with them.

Q. Before coming to a consideration of those ore bodies and beneath the ground, will you briefly give the court an idea of the approach to the mine, and the topography and the relation of the claims thereto, and you can use the model or maps if you desire in your own way?

A. These properties lie about a mile to the south of the south fork of the Cœuer d'Alene River, and about half a mile or a little less to
the west of Deadwood Gulch. As you approach the mine
1201 from the river you go in a southerly direction, up hill all
the way, and about a thousand feet above the river you find the Stewart Fraction and the Stewart Lode claims, and south of those two you find the Ontario Lode Claim. The mine is opened by two tunnels, one about 320 feet above the other one, and the upper one is called the old lower Stewart tunnel. It starts on the north slope of the mountain, and runs in a southerly direction into the hill for more than a thousand feet. The lower tunnel is called

the Fir tunnel, which starts on the Deadwood side of the mountain and runs in a southwesterly direction to the same ground, the Fir tunnel being 320 feet lower in elevation than the old lower Stewart tunnel.

Going into the old lower Stewart tunnel for quite a distance, of say 500 feet, we come to a crosscut which leads easterly, and which has been called here the Deering Crosscut. Going into the end of that lower Stewart tunnel for about a thousand feet, with a little crosscutting, there is a vein intersected by that main tunnel, and the same vein is intersected by the Deering crosscut, the vein in both places being the same vein, and has been connected by drifts and stopes all the way through, north of the Deering cross-
1202 cut and south of the main tunnel for a distance of 900 feet or so. The next level below the lower Stewart tunnel is called the 100 foot level, being about 100 feet below or so. There is very little to be seen in that 100 foot level because it is nearly all caved; you can see 50 feet of the vein at the end of a crosscut from that level, and get its course approximately. The next level is called the 200 foot level, further down; on that level the vein is continuously developed for about 850 feet. On the 300 foot level, still below, the vein is again well developed and accessible in all places, nearly, for a distance of 800 feet. On the Fir tunnel the same vein is developed for a distance of about 500 feet.

Now, all of the south ends, the ends of these drifts on the vein on the south, still show at the breast the vein which I have been talking about; that is, we know that to the south this vein must continue for some unknown distance. But going to the north on all of these drifts the vein meets a crevice, which absolutely cuts it off. The vein terminated against that crevice, which has been called the Osborne fault.

The direction of these drifts that I have been speaking
1203 of on all the levels for this long distance plainly demonstrate the direction of the vein on the level, the direction of the vein being its course on the level. The direction of the vein on the lower Stewart tunnel level is north 30 degrees east. On the 200 foot level it is north 42 east. On the 300 foot level it is north 32 east. On the 400 level it is north 15 degrees, only, east, as far as developed. The dip as a general thing is about 45 degrees to the southwest, then, if we take the north 30 degrees east course as the direction of the vein, the dip of the vein is at an angle of 45 degrees downward in a direction of south 60 degrees east. The lower Stewart tunnel level and the 300 foot level show a continuous vein without any interruptions, while the other levels all have some interruptions of which I will speak later.

As I have said, the vein on the north end was absolutely cut off by a fault, called the Osborne fault, and it is a fault of great throw without doubt, and estimated by competent people in the district to be several thousand feet. There is a down throw of the hanging wall. The direction of that fault on a level line is north 75 degrees west. The tremendous movement of one wall upon the
1204 other has disturbed the country to the south greatly, as is always found in some degree in nearly all faulting of any

extend. The down throw on the south side of several thousand feet has preserved the vein. We find in the Stewart now that the down throw has preserved it, while to the north the entire vein has been eroded ages ago. The effect of the faulting and the movement along the main fault was downward and to the west, as demonstrated by the bending of the country, and the vein within it, and by the drag of the ore as it is shown in places in the ground. The main fault is accompanied by subsidiary faults, which in my opinion were contemporaneous with the main fault; that is, as the main fault threw down the mass of the country to the south, it did not do it on one fissure, but by step faulting, that is, by several fissures, the movement on these fissures differing in distance to some degree. It was also accompanied by cross faulting, that is other faults going out from the main fault at several angles, even at a right angle to the main fault, which cuts the Stewart vein into a number of sections and fractions, which, if patched together again the way they originally were situated, would make the vein as it was originally, but as it is found now, the vein is interrupted, not only on its course, but also on its dip in a number of places, but the main level, 900 feet long or so, on the lower Stewart tunnel, is uninterrupted by any faulting on its course, and I take that to be—north 30 degrees—as the main direction of the vein, because it also tallies and agrees with the strike and dip of the ore bodies in controversy, that is, the Gray stope 320 feet open and more—350 feet, also 30 east, and the other uninterrupted drift approximate this closely.

1205

Q. Right there, may I ask a question, Mr. Boehmer? In giving the courses of these various levels for the purpose of showing to his honor the direction of the course of the vein on its onward course and its dip or downward inclination, what do you take into consideration, and by that I mean, do you consider the entire opening or some local course which you may secure at some particular point?

A. I take the general course, and I would like to illustrate that by a little sketch, to make it plainer.

Q. I should be very glad if you would.

Sketch marked Defendant's Exhibit "W," for identification.

1206 A. Nearly all veins, or all veins as found in nature, are not in a straight line, because there is no straight line in nature, but there is more or less curvature in all veins, and I would illustrate that by a straight line which is bent and waved in the vein, and then a straight line again. Now the direction of the dip is always at right angles at the very point where the strike and the dip are taken; that is, on the straight line on the left, marked AB on the sketch, it has a dip at right angles in the direction of the arrow I put underneath. The same thing would be the case on the other angle, where the line of the vein is straight. But at the bend, if I take the local strike and dip on a direction as shown by the arrow on the sketch, and a little further on where the vein turns back, I get a strike and dip as shown by the arrow at that point.

Those two arrows show a dip at almost right angles to each other, but neither of them would tell me the true strike or dip of the vein, because it is simply a local dip or strike, and on the downward course these dips would change again and merge into the normal dip of the vein at some point lower down. So I take the line AB from end to end as the strike of the vein, and in this case,

I have got to take the ore bodies in the Ontario into con-
1207 sideration as well, I of course take the full levels for the strike of the vein, and not the strike of the vein as it appears in the Stewart Lode claim alone.

Q. You, say, Mr. Boehmer, that in determining the strike and dip of this vein of which the Ontario ore bodies are a part, that you consider all of the workings throughout their extent as they are disclosed to you, and that you do not confine your investigations solely to the Senator Stewart Fraction claim. I wish you would amplify that a little by going to the map, Defendant's Exhibit B, and will you indicate to the court how far from the so called Osborne fault the south side line of the Senator Stewart Fraction is, or if you desire, you can use that Exhibit 3, where Mr. Clancy identified it.

A. There is about 300 feet.

Q. How far is the Gray ore body from that so called Osborne fault, the nearest, and the furthest part?

A. The nearest part is 700 feet and the furthest part is 860 feet.

Q. The Frank ore body, the nearest part of the Frank is how far?

A. The Frank is 850 feet to the nearest part, and the
1208 furthest part is 1,100 feet.

Q. You have already indicated in the answer which you have given to me the general effect of that great faulting upon the vein. You said something about some minor faults or fractures that extended out from the main fault fissure. Could you illustrate that a little better by a sketch that you can make?

A. Yes.

Q. Let us put that sketch on the same sheet of paper, there down at the bottom of the sheet on Defendant's Exhibit "W"?

A. Well, that level blue line can be the surface and the inclined line dipping to the south is the main fault. Now, that is probably the footwall of the main fault, lying away back in some place, back of the workings in here. The whole country did not move on that one plane alone, but moved on a number of subsidiary faults, which might be called, and has been called step faulting, that is, it slid a little more on one plane than on the other. At the same time there were en-umerable faultings between these main slips at all sorts of

angles, and outside of the main fault zone, faults and breaks
1209 started from that and cutting the vein, not on the dip but on the strike, so that the ore bodies and the vein would have an appearance on this section the way I draw the red line, with the fractures between, and fragments of the vein enclosed irregularly in the fault zone. This is especially shown in good shape on the ground in the lower Stewart tunnel level; between the two branches of the fault as exposed there there is actually a fragment of the

vein on which, as far as developed, two or three feet of good galena appear, dipping to the north, entirely moved away from the regular direction and dip of the vein. That is at the particular place when the plaintiffs spoke of a curve or basin in the vein.

Q. A fold, I think they said.

A. A fold, I think that is what they called it. I think there is not a fold and a connecting fold between the two bodies, but there is a fault between the Deering fault and the approach of the Deering fault to the main fault as has disturbed that particular section of the vein much more than anywhere else.

Q. Mr. Boehmer, I want to ask your attention to the model or to the maps as you prefer, and from them will you kindly explain to the court what you have heretofore indicated, namely the termination of that vein upon its onward course by the fault, and
1210 how that is shown in the ground or upon the model, and as to the termination of the vein as it is cut off by the fault, what in your judgment that is, or represents?

1211 A. As I have described, the vein to the south in all the levels away from the fault continues in a southerly direction as far as we know, because it is visible at all the breasts to the north each one is cut off and rather sharply cut off at the point of contact, but as it approaches the fault the entire vein inclosed within the country rock, the country rock as well as the vein together, are bent against the fault. I think the entire country for one hundred or two hundred feet to the south of the fault bent and bent the vein with it, and I would like to illustrate that on a sketch where I have observed it in other districts, which absolutely demonstrates that the entire country will move against the fault.

Q. Mr. Boehmer, I will come to that just briefly. I wanted to ask you one or two questions before I take up another sketch? What is the character of this vein as you have found it from your investigation in the ground as to being a fissure or——

A. The vein is a fissure vein cutting through the country at an angle acute to the stratification to the rock. The rocks in this neighborhood are all sedimentary and stratified, and the vein
1212 does not take the line of stratification, but cuts at an acute angle across it; that is, the vein runs north thirty degrees east, while the dip of the sedimentary rocks is south twenty degrees to the east, as nearly as I can determine in preserved places, although near the fault the country has been so disturbed that it is difficult to find any two dips agreeing one with the other.

Q. Now, it has been testified in evidence here and you have spoken some of the irregularity of the vein, for instance, you have spoken of it that the plaintiff's claim there is a fold and you claim it is a fault; are those irregularities caused by replacement or some other cause, and if some other, what?

A. No, sir, I think if the vein were patched up to its original shape it would show a good, true, fissure with replacement of the walls in a number of places, but the great irregularity of the Stewart mine is caused especially and mainly by the fracturing and faulting and not by the irregular replacement of the country rock.

Q. One fault has been referred to here as the Clancy fault and the

plaintiffs have claimed that that represents the termination of
1213 the vein on its upward course in a westerly direction or on its northwesterly course upward. Have you examined the exposures upon that fault?

A. Yes, sir, I have.

Q. Have you examined the upper Stewart tunnel?

A. I have, in the tunnel.

Q. And such openings as are accessible therefrom?

A. Not all of them. I did not go down that raise that connects with the ore.

Q. Mr. Boehmer, I will ask you where in your judgment from your investigation and inspection of the Ontario ore bodies and the country generally thereabout is the apex of the ore bodies within the Ontario which have been developed and are in litigation in this action?

A. The apex of the Frank and Gray ore bodies, I can show best on the model, and would be indicated by laying the pointer on the dip of the Frank stope. The true dip would be this, would be the apex of it to the northwest and not to the northeast, because to the northeast we walk on a level until we strike the so called apex resting against the fault.

Q. Whereas, if you go to the northwest in the direction you have indicated, how do you go?

1214 A. You go on the true dips upwards, and it is a mere incident that the top of the Frank stope is about on a level with the 300. The top of that stope is governed by the boundary line of the Ontario lode claim; they have stoped up to their boundaries, but the vein is there and the ore is there and there is nothing to indicate to me that that would be interrupted on its upward course.

Q. Extending on beyond up here——

A. Extending on beyond, and it might come to the surface, and if it does come to the surface it would be a thousand feet higher than where the so-called apex against the fault intersects the 300 foot level.

Q. And the same is true of the Gray ore body, Mr. Boehmer?

A. The Gray ore body is separated from the Frank by a minor fault, fault No. 11; that is cut off there on its way to the surface, but the Frank could be continued to the surface.

Q. In your judgment, however, are they separated portions of the same vein?

A. They are the same vein, I have no doubt.

Q. And the apex of that ore body then you would look
1215 for beyond the fault in what direction?

A. To the northwest altogether.

Q. Does the Osborne fault cut off the vein upon its onward course as you have heretofore described so that it presents an undercut or an overcut edge of the end of the vein?

A. It is an undercut.

Q. Perhaps you could sketch that so as to more closely represent——

The COURT: That is exhibit "W"?

Mr. GRAY: That is exhibit "W."

A. If I took the course of a vein on a level line or approximately level and show a fault dipping the same as this one does on the south end (drawing on diagram) and follow the vein at the junction of the fault with the vein and mark it in red, I would have an apex all along that red line. That is in the direction of the dip as I illustrate by the arrow. You could start on any point on that apex and go down on the dip and stay on the vein. It is, therefore, an apex in my opinion, but if you reverse it, as it is in this case, and I can paint that on the other side of the vein and lay the vein
1216 junction along that fault, I have the reverse case and an undercut of the vein and the dip of the vein would strike outside of the fault. You could not stay on the vein going down on the dip, and that is the case in this case.

Q. Mr. Boehmer, there has been presented here by the plaintiff a glass model which has been made on the bias or skew, as one witness has referred to it, where the ends of the model are also cut on the bias. Could you take that model and from it illustrate to the court where the apex to the ore bodies of the Ontario must be found by properly applying the facts as you find them in the ground; what if anything, it shows to you?

A. The vein and the main fault if taken in straight lines as we have to do when we get the strike and dip of it are two inclined planes which meet each other at an acute angle. Now, it is impossible by a model of that sort to represent that correctly. As soon as you take vertical sections in glass and lay those sections at right angles to the fault strike, you represent the fault approximately correctly, but that necessarily cuts the vein at a diagonal because it is an acute angle between the two. I can construct half a
1217 dozen or a dozen models on similar lines in similar directions, north ten west, as that model is, or fifteen west or north forty west and north thirty west and so on for every correct new model and one model would show a dip and strike differently from every other one; it would not show the true relation of the two, but they would agree in all in one thing, as that model shows, that the vein dips away from the fault. That model shows the vein to dip away from the fault because the course of the vertical sections are northwesterly. If I go into the northeast quadrant and draw sections similar to these, say, at north fifty or sixty east, I can construct a number of models which vary from each other the same way as the other set does, but they all agree in one thing, too, and that is, they show the vein to dip, not away from the fault, but toward the fault. This demonstrates to my mind that it is impossible to construct a model of two inclined planes which intersects each other at an angle, an acute angle, with vertical sections. You cannot do it; it cannot be done to show the true relation of those planes.

Q. Can that relation be fairly and for the purposes of illustration well presented by constructing one of inclined planes?

1218 A. The sections on an incline?

Q. Yes, sir.

A. No, sir; it would not do either. But it could be done by using horizontal sections; if you take glass sheets horizontal and several feet apart you can build up the true relation of the vein and the fault, but still better it can be done by actually building the model as our big model has been built up, and I have made a little one to show that.

Q. Will you present that, if you please?

Mr. GRAY: I desire to offer in evidence exhibit "W" at this time.

The COURT: It will be admitted.

The said model was thereupon marked Defendant's Exhibit "W," admitted.

Mr. GRAY: Mark this, please.

The said model was thereupon marked Defendant's Exhibit "X" for identification.

A. We have a horizontal base on which I first lay at the angles which are found underground and on the maps using mostly
1219 Mr. Clancy's figures, although we all agree on those figures pretty well, I think; the center line shows the meridian due north. The vein I claim to be north 30 degrees east. I have laid it out that way on the model. The fault is laid out in a direction north seventy-five west, the dip of the vein is forty-five degrees, and the dip of the fault is 58-34 degrees, to make it fit exact by calculation which is true to the fact underground and on the model and on the maps. Now, the line of junction of the so-called apex against the fault has a direction north forty degrees west as shown on plaintiff's exhibit No. 3. The large figure "7" forms an angle of about seventy degrees to the eye. So the angle between the strike of the vein and the strike of the so-called apex is an angle of seventy degrees included. To show this plainer I have constructed another model the duplicate of this one where I remove the fault to show the undercut.

Q. This will be exhibit "Y."

The said model was thereupon marked Defendants' Exhibit "Y" for identification.

A. This model is a duplicate of the other one, and I
1220 made it later and I did not get it quite dried and it warped a little, so that any angles that may be taken should be taken on the original one, but I made this to take off the fault and expose the line the way the vein is cut off. It is undercut at seventy degrees on the horizontal projection, but less than that if you take the calculation of Mr. Searles; that is the real correct angle; that makes an angle of about seventy-five degrees, but there is plenty of room to spare from ninety degrees; and I had to bore a hole to connect the fault with the vein and the hole there illustrates well what Mr. Wiley said was a good place for a dump.

Mr. GRAY: I offer these two models in evidence.

The COURT: They will be admitted.

The said models were thereupon marked Defendants' Exhibit "X," admitted and Defendants' Exhibit "Y" admitted.

Mr. GRAY: You may inquire.

Thereupon an adjournment was taken until 2:00 o'clock P. M. of this day, Wednesday, January 15, 1913.

1221 2 P. M.—WEDNESDAY, *January 15th*, 1913.

MAX BOEHMER, Resumed the stand for

Cross-examination.

By Mr. DINES:

Q. Mr. Boehmer, during your 33 years of actual work in the field as a mining engineer you have had occasion to observe many veins, have you not?

A. I have.

Q. And the result of your experience is that you have found those veins as they strike, sometimes outcropping through the surface, sometimes beneath the surface and undisclosed on the surface, and in their dips very many irregularities?

A. I have.

Q. By the term "true dip" that you have used in your testimony you mean the theoretical dip on a plane at right angles to the plane of the strike?

A. That is not only the theoretical but also the actual dip; it is the shortest line——

Q. That is what you mean by it, is it?

A. Yes.

1222 Q. Then, all the dips that you have referred to are dips taken in that way, are they?

A. Yes, I think so.

Q. You have also stated in one of your illustrations that if you take the dip of a vein at one point and the dip of a vein at another point, you frequently find a variation in that dip?

A. That is true.

Q. And you find the same in the strike of veins, do you not?

A. I do.

Q. Then, if your purpose is, not to determine the general course of the vein or the general dip of the vein, but the course of the vein or the dip of the vein at some particular point in inquiry——

A. No, sir.

Q. —you would take the dip and the strike at that point?

A. It would be the dip and strike at that particular point, yes.

1223 Q. And if the point in inquiry that you were called upon to make was an inquiry into the local dip or local strike, if you prefer that term for it, you would go to that point in it for that dip and strike, would you not?

A. I would.

Q. And if you had as the special inquiry an inquiry into the intersection of two veins, and the strike and dip at the point of intersection or along the line of intersection of the two veins, you would

naturally look to that dip and strike at the place of intersection, wouldn't you?

A. No, sir.

Q. You wouldn't?

A. No, sir.

Q. Not even assuming that the point in inquiry is the dip and strike at the point of intersection?

A. That would not govern.

Q. It would not govern you?

A. No, sir.

Q. Now, I am always assuming the proposition that the point in inquiry—and I will relieve you from that burden—that the point in inquiry is the dip of the vein and the strike of the two veins at that place, right along the line of their intersection. Now, I ask you, in investigating that subject of inquiry, as I have as-
1224 sumed it, you would take the strike of the vein and the dip of the vein at or near the line of intersection?

A. I would take the vein as a whole for the whole distance where I could see it, not a local bulge or a local curvature.

Q. You still refuse to answer my question?

Mr. GRAY: I don't think so.

Q. My proposition is, if the subject of inquiry be the dip of a vein or of two veins and the strike of a vein or of two veins at or near the line of intersection, would you go somewhere else to get it, or would you get it there?

A. I could get it there for that particular local place.

Q. That is what I am asking.

A. But I would not call that the dip and strike of the actual intersection of the two planes.

Q. Now, applying our illustration to this case, in your study of the relations between the Osborne fault and the Stewart vein along the lines or planes of intersection, you have not taken the dip of the Stewart vein and the dip of the Osborne fault immediately next to that intersection, but you have gone some 700 to 1100 feet
1225 away in other properties than those that are involved here, and taken your courses and your dips, haven't you?

A. Yes, I include all the known elements.

Q. And you have done that, because you have designated this particular formation of the vein and point, the particular appearance at that place as an abnormality, is that right?

A. I have not said abnormality; irregularity I would call it rather.

Q. You did not use the term "abnormality;" maybe it was your counsel.

A. I don't think I said that.

Q. I had a recollection that you used that term.

Mr. FOLSOM: That was Professor Lawson's expression.

Q. Well, it is an irregularity at that point. Now, veins themselves are irregularities in the crust of Mother Earth, are they not?

A. They are.

Q. They are so classified by geologists, as something that is to a certain extent a blemish in the form, in the stratification, in the general appearance of the earth.

A. A blemish?

Q. Yes.

1226 A. I would hardly express it that way.

Q. Would you express it nearly that way?

A. Well, that is not the right word.

Q. Well, you would not say it is normal, would you?

A. Yes, it is normal.

Q. You find thousands of miles of rock without veins breaking through them, don't you?

A. Yes, but in the mineral district the veins are normal as well as the country rock.

Q. And you describe fissures as breaks in the earth's crust, crevices, you call them?

A. Yes, but that is normal.

Q. But they are blemishes as far as the mass of the earth and its form are concerned, do you not think so?

A. Not blemishes, but they help to form the contour of the crust and surface of the earth.

Q. Now, necessarily, in speaking of irregularities, you have in your mind when you use that term some regular thing that you compare it to, is that right?

A. Yes.

Q. And so, usually in speaking of the course, the general course of a vein, you compare it with a plane?

1227 A. Yes.

Q. And when you speak of the dip of your vein, you compare it with a plane?

A. I do.

Q. Now, there is no vein which either in its course or dip is a perfect plane, is there?

A. No, but a plane can be passed through the average strike and average dip.

Q. Now, in your dips and strikes that you have presented to the court and in your models which you used before the court, you have taken into consideration the strike of the Stewart vein from the face of the old lower Stewart tunnel for about 800 or 900 feet, haven't you?

A. I have.

Q. Have you considered its strike on its easterly portion?

A. I have.

Q. You took it all into consideration?

A. Yes.

Q. Did you put it in 100 foot sections or did you simply draw one line and then make your average; in speaking of the strike of the vein in the old lower Stewart tunnel level you followed the old lower tunnel?

1228 A. I drew one line for that.

Q. Where did you draw that line?

A. From the intersection of the vein on the 300 foot level to the Siligo tunnel or the apex tunnel.

Q That is from the 300?

A. At the intersection of your end line, to the Siligo tunnel, the eastern extremity.

Q. You took that line, and then you took the other line extending about 800 or 900 feet, connecting most of the distance in the lines of the Senator Stewart claim, and for part of the distance even beyond the Senator Stewart claim to the south?

A. I did.

Q. And you applied that course in the construction of your models that you have used here?

A. I did.

Q. And you used that course in making up your own opinion as a geologist and mining engineer as to the matters of opinion that you have testified to?

A. I did.

Q. It is also true that you took the 200 foot level from its face, outside of the Senator Stewart, running through the Senator
1229 Stewart, and for a portion of the way, in the Senator Stewart Fraction, and you used these outside course- in giving your opinion and taking your data as to that?

A. I did.

Q. Did you use the 100 foot level?

A. No, I did not use that at all.

Q. That did not go quite far enough down, did it, for the purposes of your figures?

A. It meets the purposes of my figures all right, it goes north 30 east, but it is only exposed for about 50 feet.

Q. That is the one that you couldn't get into?

A. Yes.

Q. On account of its being caved?

A. I couldn't get into it on that account.

Q. Then you took the 300 foot level and the Fir tunnel level; did you take that?

A. I determined the strike there, but I did not take it into consideration, because it is rather abnormal, differing too much from the general strike.

Q. So you think that where we have a subject of inquiry
1230 at the intersection of the Osborne fault and this vein, and as to their relations to each other in the Senator Stewart Fraction, that it is perfectly fair for you to overcome the actual strike and actual dip at this line by averaging it with the strike and dip of the vein in remote portions about eight and nine hundred feet away?

Mr. GRAY: I object. The special subject of inquiry, as I understand the pleadings in this case, is the ownership of the ore bodies in the Ontario mine, some 800 feet from the point that counsel has attempted to limit the consideration of this witness to.

(Objection overruled.)

The COURT: I think it is very proper on cross examination.

(Defendant- excepts.)

A. I think it is the only fair way, because the line or plane of

that fault is very irregular. There is a bulge in the fault which runs east and west; the country is disturbed; I cannot possibly get the right condition of the two veins in relation to each other in such irregular places; I must take the general strike of the vein for a long distance.

1231 Q. Now, did you take the strike and dip of the vein at the point where you have a view of the point of intersection?

A. I think you can find almost any strike at that point.

Q. Please answer the question?

A. I did not check it in detail at every point, except by the eye.

Q. You did not give us the benefit of those courses and dips?

A. Well, I gave the courses of the levels within your Senator Stewart Fraction claim.

Q. You did not give them to us, because you indicated them as an abnormal thing, as something that was so irregular that you did not think it ought to affect the issues in this case, or affect your opinion as a geologist, did you?

A. No, sir, I included the strike of those.

Q. The strike and dip right at the place of contact?

A. Yes, I did; it was part of the strike as given.

Q. But you did not read them to us.

A. Yes, sir, I did.

Q. I think not. Did you *give* us the strike and dip of the vein from actual calculations that you had made at different points

1232 here near the easterly end line where the Osborne fault and the vein are in contact?

A. No, but I included——

Q. That is what I asked?

A. I included the vein in your claim in the general strike of the whole vein.

Q. But you did not consider that separately at all?

A. No, I did not.

Q. And you did not consider that in presenting to the court these beautiful block models in red and blue here that you last introduced?

A. No, sir; I took certain averages there.

Q. You took averages to make your calculation?

A. Yes.

Mr. GRAY: I don't want to have you in error, or the witness, Mr. Dines. As I recall it, he took Mr. Clancy's courses, he said.

WITNESS: No, they tally all right through.

Mr. DINES: No, he said he took his own, but they tallied. I wish, Mr. Gray, that you would not interrupt me unless you have a legal objection. I do not wish to preclude counsel from making any proper objection, but it is a serious interruption to a cross

1233 examination.

Mr. GRAY: I shall call your attention to any misstatements or objectionable questions that you may ask in the cross examination.

Mr. DINES: Certainly, but the witness did not state that, and I think I should be allowed to cross examine without unnecessary interruptions.

The COURT: Yes, permit him to cross examine.

Q. You did not state that you took Mr. Clancy's dips?

A. I said I took my own, but they agreed with Mr. Clancy's.

Q. I so understood you. Your counsel seems not to have understood you.

Mr. GRAY: I understood perfectly.

Mr. DINES: Very well, then, you misrepresented it to the court, one or the other.

Mr. GRAY: Have it as you please.

Q. Now, Mr. Boehmer, you did not consider the strike and dip of the Stewart vein along the line of the eastern end line separately from your other dips and strikes, because you thought it was so irregular at that point that you would have to get these others to make it regular?

1234 Mr. GRAY: That is objected to as repetition. It is three or four times that this question has been asked and answered.

(Objection overruled. Defendant- excepts.)

A. Yes, sir.

Q. Why, according to your theory, if you have in nature an irregularity that you are studying, you will undertake to fix it, to regularize it before you come to a conclusion in your study of it, is that right?

A. That is right as a rule, yes.

Q. In other words, you re-form to that extent the processes of nature?

A. No, sir.

Q. Well, you don't take the natural course and dip at that point right at the irregularity that you speak of?

A. I take it, but I do not use it for determining the meeting of the planes.

Q. According to your idea, a hunchback could not vote, could he?

Mr. GRAY: That is in line with the other questions.

A. I don't know any answer to that question.

Q. If I had a man with a deformed spine, with a curve in it, and the question is to study it in order that he may be given
1235 some relief from science, would you consider that the fact that there was a bend in his cervical vertebræ, from a hump on it, that it was any less of a spine?

A. No, but I would not add to his height the curvature of his spine.

Q. But in studying his spine, the point of it that was curved, you would want to know the curve, would you not?

A. Yes.

Q. You would not straighten it up by taking the straight portion of the spine and adding that to the curve?

A. No, I would consider that the man was straight, with the exception of that irregularity.

Q. You would not think that it helped his spine any to add the straight part of his spine to the crooked part, would you?

A. Yes, I would, to get the average of it.

Q. I am not asking you about the average; I am asking you about studying the irregularity?

A. And curing it?

Q. Yes, and studying the irregularity. You would take the curve for that?

A. Yes.

1236 Q. Now, here we have an irregularity in this vein, and the irregularity is the subject of study before the court, because we have at that point an important intersection of two bodies extending down into the earth. Will you kindly give us, if you have it in your notes, the strike and dip at the 400 level immediately contiguous to this condition that we are studying at the easterly end line of the Senator Stewart Fraction, the strike and dip of the vein and of the fault?

A. For what length?

Q. Right at it; just as near to it as you can get it, as it is right there. Take a few feet, of course, either way, but just state what that dip is right there from your notes?

A. It depends on the distance altogether.

Q. Well, take it over a distance there of 20 feet?

Mr. GRAY: I object, because there is no such place on that end line in the Senator Stewart claim.

Mr. DINES: I think the witness can answer that. As his honor said of one of our witnesses, he seems to be of more than ordinary and fair intelligence.

The COURT: I certainly agree with you on that proposition.

1237 Mr. FOLSOM: We have now got one witness on each side whose intelligence is adjudicated.

A. The strike in that neighborhood is north 75 west of the fault.

Q. You are speaking of the 400 now?

A. Oh, the 400; the strike would *ne* north 75—well, north 85 west of the fault, I will say there, that is, taking into consideration the entire level, not that four feet of it.

Q. Can't you give it to us right there at that place, within 15 or 20 feet?

A. I can give you almost any figure if I should take that in the ground.

Q. No, I only want it right there. I don't want you to take the whole level, but taking it right there where it is shown in the last portion of that, right near the Osborne fault?

A. Well, it is about north 80 west, that is all I can say.

Q. What is the dip of the fault at that place?

A. About 70 degrees.

Q. What direction?

1238 A. I gave you north 80 west.

Q. Are you giving that from memory or from your notes?

A. From memory.

Q. If you have any notes, I would like you to give it from them?

A. No, I did not take notes of the actual contact of the vein with the fault, because I can get almost any direction there.

Q. Did you have any within a hundred feet of there?

A. I gave it in your claim up to your side line.

Q. By using all of the levels in the claim?

A. No, not using the rest of it, only using the strike of the vein on those levels within the Senator Stewart Fraction.

Q. But you take all the levels, both in their approach to the southerly side line, as well as the levels immediately adjacent to the easterly end line?

A. Yes, I take all the levels.

Q. Now, have you the dip of the vein on the 400 foot level at any point near that easterly end line?

A. It varies from 10 to 40 degrees; there are all sorts of

1239 angles.

Q. You said 70, and I thought you were in error?

A. No, that is the fault. The fault is 70.

Q. I misunderstood you, then. The fault you gave as 70 degrees dip?

A. Yes.

Q. Now, the strike of the vein is at that point, at the easterly end line of the 400 level about what?

A. North 15 east.

Q. Did you take that yourself?

A. I took it from the map.

Q. Will you point out the portion of the level where you took that strike of the fault in the 400 level at north 15 east?

Mr. GRAY: I object, Mr. Dines, he did not say the fault.

A. The strike of the vein.

Q. That is my mistake. The strike of the vein is north 15 east?

A. The way I hold the pointer is the strike of that vein on the 400 foot level.

Q. Where did you get that, up above the level?

1240 A. No, right on the level.

Q. Did you follow the level for any distance in making that calculation?

A. Yes, for four or five hundred feet.

Q. The strike of the vein that you have given, north 15 east, how did you take that?

A. From the maps, which are much more correct than——

Q. You didn't take it in the level?

A. No, I did not care to take it in the level, except for a few feet.

Q. What kind of instrument is there that you took these strikes and dips with?

A. There are different kinds of instruments which take it at local places for a few feet; we make a transit survey accurately to determine the real direction.

Q. Is there any special instrument that is specially designed for taking dips?

A. Yes, there are all sorts of clinometers.

Q. Did you use a clinometer in any place?

A. Oh, yes, many times.

Q. But this observation is not based on the use of a clinometer in the ground?

1241 A. No, it is based on the map.

Q. Now, give the dip of the vein at the same place, on the 400 level up near the easterly end line?

A. It varies from 10 to 40 degrees, wherever you wanted to take it; it is very irregular.

Q. You did not get any dip there right at the line of 65 degrees southerly, did you?

A. No, I did not.

Q. Or 45 degrees?

A. 45 degrees I should call the general dip of the vein.

Q. Do you know what was the included angle on the strike immediately adjacent to the easterly end line of the 400 where the vein and the fault come together, the included angle?

A. Between the vein and the fault?

Q. Yes.

A. About 30 or 40 degrees.

Q. Did you make that calculation from your own observations?

A. That could be determined in the stopes, right in the ground.

1242 Q. You say it could not be determined in the ground?

A. I say it could be, and I did do that.

Q. Did you do it that way?

A. I did.

Q. Isn't it a fact that the included angle at that point on the 400 foot level is 12 degrees between the Osborne fault and the vein.

A. I think you have got it too small.

Q. You don't think you have got it too large?

A. No; I think it is 30 or 40.

Q. Isn't the 30 or 40 degree angle that you are referring to an angle which you have made up on your average strikes and dips taken over the whole territory to which I have called your attention?

A. No, I took that right there at the point of contact.

Q. Now, on the 300 foot level, Mr. Boehmer, please give me the strike of the vein?

A. Right adjoining the fault?

Q. Yes.

A. It would be about north 60 east, I think.

Q. Do you answer that from your own observations made in the ground, or from your own notes taken?

1243 A. Yes, and checked on the maps, where I can do it much better.

Q. What is the dip of the vein at that point on the 300 foot level?
A. About 30 degrees in one direction, and 45 degrees in a direction about 45 degrees angle from it.
Q. Is that strike and dip that you have just given me at the same place?
A. It is in the big stope on the 300, yes, sir.
Q. And you took both of them from that, at that place?
A. Yes.
Q. It would be 30 degrees in which direction?
A. Southeast.
Q. What was the strike of your fault in that 300 foot level in the immediate vicinity?
A. North 75 west.
Q. What was the dip of the fault at the same place that you took the strike?
A. About 60 degrees.
Q. What direction.
A. Southwest.

Q. What is your included angle between the fault and
1244 the vein?

A. It would be 40 degrees or 45.

Q. Was that the angle of 40 or 45 degrees calculated by you upon these actual strikes and dips that you have given me at these points, or did you take any other data into consideration?
A. I took it right in the ground and in addition, tested it on the map.
Q. Now, what is the strike of the vein on the 200 foot level right near the easterly end line?
A. North 50 east, about.
Q. What is the dip of the vein at the same point?
A. About 45, I think.
Q. Southerly?
A. Southeasterly.
Q. What is the strike of the fault?
A. North 75 west.
Q. Is that taken where the fault appears in the 200 level?
A. Yes, that is taking the entire fault. The 200 opens it in several places. Right at the junction it is probably due east and west.

Q. And what did you give as the strike there?
1245 A. North 75 west; that is the real strike.

Q. And what is your dip of the fault on the 200?
A. About 55.
Q. Was that observation made by yourself?
A. Well, that is a guess down there.
Q. What is your included angle taken from this same data, without the use of any other?
A. It would be 45 degrees.
Q. Did you use that angle in the construction of your model?
A. No, sir.
Q. On the tunnel level, the old lower Stewart tunnel level, what

is the strike of the vein in the face of that level nearest to the easterly end line of the Senator Stewart Fraction?

A. About north 45 east.

Q. What is the dip of the vein at the same point?

A. It is very much disturbed and caved there; I can't hardly tell you up there.

Q. From those observations, the observations you gave as to strikes, are they from your own notes taken there?

A. Oh, yes.

1246 Q. How far from the east end line did you get that in the tunnel level, that strike of the vein of forty-five east?

A. How far from the east end line?

Q. Yes, sir, of the Senator Stewart Fraction?

A. It is about six hundred feet, I think, from the east end line.

Q. From the easterly end line of the Senator Stewart Fraction. You must not misunderstand me. I am asking you the strike of the vein in the tunnel level at the nearest point that you took it?

A. The old Stewart tunnel level?

Q. Yes, sir; the nearest point you took it where it comes to the Osborne fault?

A. You say to the east end line?

Q. Well, maybe I misled you there. I will ask you for that as near to the Osborne fault as you can find it?

A. I do not know how far the Osborne fault is from there; it is probably forty or fifty feet from the workings.

Q. Is there a drift that comes up to the Osborne fault

1247 in any place?

A. It is all caved in and inaccessible.

Q. You never got into that?

A. No, sir.

Q. What is the strike of the fault at the tunnel level, the nearest point that you could determine it to the easterly end line?

A. Well, I will call it north sixty-five west, although I have not any data for that; the fault turned slightly and flattened.

Q. What is the dip of the fault at the same place?

A. I would say it was fifty degrees, about.

Q. Did you take the strike of the Stewart vein in the apex drift?

A. It is about north sixty east; sixty-five east, I would say.

Q. Did you make that observation yourself?

A. Yes.

Q. What dip did it have at the same place that you took that observation?

A. Including the raise I would say it is forty-five degrees.

1248 Q. Is it not a fact that the vein is very steep at that place?

A. Yes, I believe it is steeper than that; I would make it fifty-five.

Q. Haven't you any note on it, as to its calculation?

A. No.

Q. Do you not think that that vein in the apex drift has a dip of sixty degrees?

A. That may be right. (After measuring.) I think it is less than sixty on the model.

Q. How much do you think it is from that model?

A. Fifty-five.

Q. Fifty-five degrees. What is the strike of your fault at the point where it is disclosed in the apex drift?

A. The main fault is not satisfactorily visible there. There are a number of other faults interfering and I cannot fully tell the strike of the fault there.

Q. Could you find the dip of the fault there?

A. No.

Q. For the same reason you could not get an accurate dip?

1249 A. Yes, sir.

Q. Now, your models, Mr. Boehmer, you have made from the data which you frankly stated show the general strike that is, the average general strike and average general dip——

A. Yes.

Q. (Continuing:) ——of your vein and fault. Taking defendant's exhibit "X" which is the first one you presented to the court, you gave to the fault a dip of fifty-eight degrees and thirty-four minutes?

A. Yes, sir.

Q. And to the vein you gave a dip of forty-five degrees?

A. Yes, sir.

Q. Now, you do not wish to be understood by the court as saying the actual dip of the fault along this line of intersection at that local place is fifty-eight degrees and thirty-four minutes, do you?

A. No, sir, I would not.

Q. And you do not mean to say that the dip of the vein colored in your model in red at that particular point along that in-

1250 tersection is forty-five degrees, do you?

A. I would not.

Q. It is true, is it not, that where two solid bodies intersect such as the vein and the fault, you can vary the angle of their intersection at any time and any way by varying the angle at which they meet, can you not?

A. And the dip of both——

Q. By the angle and the dip of both at which they meet?

A. Yes, sir.

Q. You can vary it in any way?

A. Yes, sir.

Q. You can change that particular figure in which the intersection is made to a top edge or a bottom edge as you vary and shift the dips of the bodies and their strike as arranged in their relation to each other at that point, can't you?

A. Yes, sir; it depends entirely on the angles and the dips.

Q. You have not claimed exhibit "X" has a scale to represent the exact position of the fault and the vein along this line of intersection, have you?

A. No; the fault and the vein proper, not the actual inter-

1251 section.

Q. You have used this then — for the purpose of illustra-

tion then for the purpose of any exact representation of the intersection?

A. No, I have put the exact figures in there, and if those figures are correct, then the sections drawn from them are correct.

Q. If the figures you have used are correct?

A. Yes, sir.

Q. And you have already stated that that line may be shifted and varied from bottom to top edge according as the dip of the planes along the line of intersection and their angle of strike varies?

A. Certainly, if their angles differ you have a different result.

Q. And yet in giving this representation to the court which you say is accurate you admit that you have added to it, taken averages from the dip and strike of your vein at other portions of the property than right where they intersect?

A. I did, certainly.

Q. That is correct, is it?

1252 A. Yes, sir.

Q. I did not misquote you in any way?

A. No.

Q. Mr. Boehmer, if I ask you to give me the angle of intersection of a bow window with a house where it comes up against it, if it was put on a slant, you would not take the general course of the wall in giving me that angle of intersection, would you?

A. Yes, sir, I would use that for one——

Q. One dimension?

A. One dimension of the angle, yes.

Q. But if it was varying, if the wall was varying, you would not average it altogether to give me the exact line, the exact angle which that line where your bow window comes up against your house takes, would you?

A. If the wall bulged I would take the average of the straight wall.

Q. Well, if you were to give me the angle between two planes represented here by the covers of this book that I hold in my hand, and there was a curve, we will say, a break in the book, one part extending this way and the other that way, and I wanted you to give

1253 me the exact angle of intersection with which those parts meet, you would take it when it was plainly before it, would you not?

A. Yes, sir.

Q. Without taking averages?

A. If you could determine where they actually come together, but where they come together here it is so irregular that no definite strike or dip of any kind can be determined.

Q. Where, if it is so irregular where they come together,—please tell me then how it is that you can present by straight bodies, by straight lines as you have presented on exhibit "X" the line of intersection and tell his honor that it is a top edge or a bottom edge or a side edge, if you do not know how the planes meet at that particular point of intersection?

A. I do not know the planes at the different little points, but I know the direction of that plane from an average.

Q. Is it not a fact that that model that has already been identified here, in showing that line of intersection, when you look down
1254 along this plane where the vein comes up, and put a pointer between the two, I will ask you if you get the same angle that is put on your figure?

A. I do exactly.

Q. You think it is the same?

A. I do, especially on your figure No. 3; the branch of figure No. 7?

Q. That is, you would make a No. 7?

A. Yes, sir.

Q. But the point you consider is not a portion of this other side, if it is the intersection itself?

A. Yes, sir, it is the same line of intersection that is on exhibit No. 3.

Q. I have placed upon this model exhibit "X" a celluloid red sheet which is curved at this point, and you find that there is an actual curve both in the vein and in the stopes that are made on that vein, that would indicate that position, do you not?

A. Yes, sir, but that does not represent the actual facts underground. The vein butts against the fault and bends slightly two hundred feet away, and you can follow it in a straight line for a thousand feet further southwest. That makes a gradual curve
1255 which does not exist.

Q. We will assume for the purpose of the question that I am now about to ask you—can you see that from there?

A. Yes.

Q. (Continuing:)—that the Stewart vein at one time had an extension along the line of the pointer which is in the direction of the red upon exhibit "X," and that a fault cuts it off along the lines that are shown by the celluloid figure so that the other portions of it were entirely dissipated, but the vein itself as it was in the ground cut by the fault, the line of cutting is as shown on that celluloid, would you say that the line of celluloid as I show it there on blue is a bottom edge?

A. Well, you could get that in the other direction, then you have a bottom edge.

Q. Yes; I am asking you the way I am representing it to you, would it be a bottom edge or top edge?

A. That would be a top edge, I think, in the direction to the southeast.

Q. Yes, sir; now, it would not make any difference, that would be the top edge, whether these other portions of the vein had been worn away and dissipated by natural forces, erosion, attrition, or
1256 whether a fault had come up and cut it in that particular way, would it?

A. No, not in my opinion.

Q. The question of how it was done would not affect your judgment as to whether it is a top or bottom edge?

A. No, sir, I take what I find.

Q. Now, I will ask you if it is not true that the top of the Stewart vein is shown in your apex drift?

A. Yes, sir, I think so.

Q. For how long a distance is that vein exposed in that drift, that top of the vein?

A. For less than half of it, but there is a crosscut which also shows it.

Q. How wide is the vein to your best judgment in the vicinity of the apex drift?

A. I should think it would be about ten feet, something like that; ten feet, I should judge.

Q. What portion do you refer to, the western portion of the drift or the—I asked you thickness?

A. Yes, sir.

Q. About ten feet. You did not find the vein then entirely in the crosscut?

A. No, I think not.

1257 Q. In the face of the crosscut?

A. The drift itself follows the fault plane.

Q. But you think it is ten feet in width?

A. I think so, from what I saw.

Q. No question about it being the vein in your mind, is there?

A. I think it is the vein.

Q. And there is no question in your mind about it being the top of the vein?

A. No. It is the top of the vein.

Q. The apex of the vein?

A. It is.

Q. Yes, the apex of the vein. Do you remember the point where the Clancy fault shows in the western portion of the apex drift?

A. Yes, sir.

Q. You find the vein there, do you not?

A. Yes, sir, in the floor.

Q. Yes, sir, in the floor, and coming along through the west—and in the easterly direction or northwesterly you find galena showing in streaks along the floor of the drift?

A. Yes.

1258 Q. And you have a vein in the direction that my pointer is taking in a northwesterly course all along the eastern portion of the drift to where there is gouge showing along the northerly face of that working?

A. I think the main vein is in the hanging wall there; the crosscut reaches it.

Q. The crosscut reaches it here, and the vein takes more the direction given by my pointer?

A. It would go through that crosscut instead of along the drift.

Q. Is that all top of the vein there or apex until you come——

A. It is the upper edge of the vein.

Q. Yes, sir. Well, you understand that is an apex; that is what you mean by apex, isn't it?

A. Yes, sir.

Q. Yes, sir, upper edge. Now then, you find the vein also shown below the apex drift in the workings and extensive stopes of the Stewart mine, do you not?

A. Yes, interrupted occasionally by faulting.

Q. Here is the apex of the vein up there; where is the apex of the vein in here? I speak of a place exactly east of your apex
1259 drift.

A. There is no apex there. It is eroded.

Q. It is eroded. Where is the highest point of the vein there then where it comes nearest to the surface?

A. All along the line where you claim the apex.

Q. All along that line?

A. Yes.

Q. Down to what point?

A. Down to the fir tunnel.

Q. Down to the fir tunnel. That would be the apex?

A. No.

Q. That would be the top of the vein?

A. No, sir; that would be the edge of the vein.

Q. That would be the edge of the vein?

A. Yes, sir.

Q. Is it the terminal edge of the vein?

A. Yes.

Q. Is it the terminal edge nearest the surface at that point?

A. Yes.

Q. Then it is a terminal edge of the vein and the terminal edge of the vein nearest the surface clear to the point that we find
1260 it crosses the easterly end line of that claim?

A. It is a terminal edge of the vein.

Q. Now, there you and I cease to agree. You admit with me that it is a terminal edge and a terminal edge nearest the surface but you deny that the portion of it is an apex between the points where the Osborn fault is encountered at the top of raise 214 east?

A. Yes.

Q. And the easterly end line; that is right, is it?

A. It is not the terminal upper edge, btu the terminal lower edge of the vein.

Q. The—you call that the terminal lower edge of the vein?

A. Yes, sir.

Q. That is what I wanted to ask you. Now, where is the top of the vein between the point "C" and the apex that you say is the apex of the vein up in the apex drift, where is the apex of that vein there between those two points, the point "C" at the top of raise 218 east and your apex drift?

A. It would be right at the eastern edge there of the apex
1261 tunnel?

Q. Yes, sir, but coming on down, coming on to the point "C" between here and there, where is it?

A. There is no apex there.

Q. No apex at all?

A. No.

Q. Then you have traced a natural apex on the ground in your apex drift and you find a good place to dump?
A. Yes, sir.
Q. Out there?
A. Yes, sir.
Q. No apex at all to it?
A. No. That is, you can get the apex in the direction of the dip under the Clancy fault.
Q. Let us see. All underneath that line that I have drawn with a pointer between the "C" at the top of raise 218 east and the point where the vein is shown and admitted to be the apex in the apex drift there are stopes down below where the vein has actually been commercially used and stoped up toward that point?
A. Yes, sir.
Q. Where is the top of these stopes nearest the surface?
1262 A. On the line you have indicated. But the apex, if you hold that there again, I can show you.
Q. Certainly.
A. That would be the apex of the vein under the Clancy fault in the drift, itself.
Q. Will you put that on there again so I can call the points. In placing that you have placed your pointer——
A. It would be at the intersection of the crosscut and the drift in the apex tunnel.
Q. And the lines would be through what other point—down to the East?
A. Yes, the line would be on the northeast end of the Stewart tunnel level.
Q. That is an apex along that line that you have shown, that is a top portion?
A. No, not that.
Q. Well, what is it?
A. That is the end edge of the vein.
Q. Is it the terminal edge nearest the surface of the vein between the points you have given?
A. No.
Q. It is not the terminal edge nearest the surface?
1263 A. Not nearest the surface, no.
Q. Where is the terminal edge nearest the surface?
A. Going up on the dip and going to the surface (indicating).
Q. Where would that line be placed; mark it?
A. Some place in the apex drift.
Q. Extend it on easterly, do not be afraid of it.

Mr. GRAY: You cannot extend it easterly.
Mr. DINES: Wait a minute, if you please, Mr. Gray. The witness has a right to answer for himself.

Mr. GRAY: You asked him six or seven times the same question; he has answered it. I object to it as a repetition.
The COURT: Objection overruled.

Mr. DINES: I ask you to locate between the lowest point that you

identified as the apex of the Stewart vein in the apex drift and the next point where you find a terminal edge, the terminal edge of the Stewart vein nearest the surface without asking you to call it anything, give me the terminal edge?

A. It is lying the way I hold my pointer. Right where the crosscut intersects the apex—the apex of that point would be in
1264 that tunnel.

Q. Is that where I marked it?

A. Yes, sir.

Q. I mark this, if you will pardon me for not using your titles, with your name. That is the line that you designate as the terminal edge of the Stewart vein that comes nearest the surface at that point?

A. No.

Mr. GRAY: I again object. Repeatedly he stated that Mr. Dines' assumption is absolutely an incorrect assumption of what he has testified.

Mr. DINES: Your honor has heard me.

The COURT: I shall overrule the objection, but the witness and counsel do not understand each other, and I will let you make your explanation.

Mr. DINES: I am perfectly willing for him to explain. Now, Mr. Boehmer——

Mr. GRAY: Let him do it; permit him then?

The COURT: Yes, let him now.

A. I have not stated what you say.

Mr. DINES:

Q. All right; you say then what you want to say.

1265 A. You have asked me where I would find the apex of this vein when I started at the extremity of the upper old Stewart tunnel.

Q. Yes.

A. I draw a line from there on the dip of the vein which you have indicated by pencil and which hits the intersection of the crosscut and the drift.

Mr. GRAY: In the apex tunnel.

A. In the apex drift, yes, and that is much higher than any point on the line that you have drawn of your terminal edge of the vein.

Q. You do not understand my question, Mr. Boehmer. I will ask you again. You have placed an apex that you agree is an apex to the lowest point in the apex drift that you identify the top or apex of the Stewart vein?

A. Yes.

Q. Please mark that point so we will have no doubt or dispute where it is.

A. We will take the point "W-1" there.

Q. "W-1". Now, from "W-1" on easterly——

A. Southerly.

Q. Or southerly. Southeasterly if you prefer it; where is
1266 the terminal edge of the vein nearest the surface, not the top, cut out the word top. From that point and the point "C" at the top of raise 218 east.

A. I repeat it is at the intersection of the crosscut and the drift of the apex tunnel.

Q. I am not asking you for the point; I am asking you, along that line where is the top of the ore bodies that are stoped in here beneath, where is the terminal edge nearest the surface of those?

A. In the apex tunnel, I say.

Q. But over here now east of the apex tunnel, where is it?

A. East of the apex tunnel there is nothing; the vein is eroded, it is cut off by the fault there.

Q. Well, take the part that is eroded and tell me where is the highest part of the vein that lies up against the fault until you find a vein that is not eroded, what would be the line of that?

A. It is the same, I repeat it again, at that intersection.

Q. Do you mean to say that all along this line marked "Boehmer" you think would be the highest part of the ore bodies that
1267 lie up against the fault.

Mr. GRAY: He did not say anything of the kind.

A. No. I say that the apex of the lowest point on the line you have given on the eastern extremity of the tunnel level hits to the highest point or apex of the vein in the direction of the dip——

Q. I am not asking you about the apex of the vein; I am asking you the line of the termination or edge of the ore bodies between those points?

A. That is a different question.

Q. That is what I have been trying to direct your attention to.

A. That is the line (indicating).

Q. You have drawn a line to the north of the line that I marked "Boehmer", and so that there will be no misrepresentation of you in this matter we will erase the word "Boehmer" and put it at this line.

Mr. GRAY: Now, you have changed the "Boehmer" on to another line, Mr. Dines?

Mr. DINES: Yes, sir, to the line he has last identified and marked himself. Have I marked it correctly, your honor?

1268 The COURT: Yes, you have marked it correctly, but I think that other line indicated his answer as to the direction to reach the apex on the drift.

Mr. DINES: I am not asking for a dip line; I am asking for the uppermost portion of the ore bodies nearest the surface.

Mr. GRAY: Hereafter all reference to the line marked "Boehmer" is along the line marked "Boehmer" which is the more northerly of the two lines.

Mr. DINES: That is correct, Mr. Gray.

Mr. GRAY: So that the record may not be confused.

Mr. DINES:

Q. Now, you think the ore bodies as you have seen them developed down in the ground, if you take the edge of them nearest the surface at this point in the direction of the line that is marked by you that they would likely extend up as far as that line?

A. Yes, sir.

Q. And there what happens to them?

A. They hit the Clancy fault. They hit the real apex.

Q. They hit the Clancy fault. You mean over here?

A. Yes, sir, anywheres there.

1269 Q. You say that the Clancy fault is in here?

A. No.

Q. Well, now, I say, what is it that keeps the ore bodies from coming on up as high, a point here, as the vein is shown in your apex drift?

A. It is equally as high at the end of your edge.

Q. But you have something that terminates these ore bodies; you have stopes below and they are coming up?

A. Yes.

Q. And you have something at this line that terminates them; what terminates them?

A. The fault. That is the Osborn fault.

Q. That is the Osborne fault, is it?

A. Yes, sir.

Q. Then the line that you have drawn in black on plaintiff's exhibit 1 represents as nearly as you can calculate it, does it, the line of intersection between the Stewart vein and the Osborne fault?

A. Yes, sir.

Q. Between those points?

A. Yes, sir.

Q. How is the line represented from that point on to

1270 the easterly end line, what workings is it shown in?

A. It is shown in all the lower levels on an approximate average line of a raise in that direction.

Q. You spoke of a portion of the vein lying along the line of my pointer and passed through W-prime and the easterly end line of the Senator Stewart Fraction as being dissipated; am I correct?

A. I said the vein was destroyed to the north of the fault.

Q. Well, that is a line to the north of the fault, isn't it?

A. No, sir.

Q. Where would be to the north of the fault that you mean it is dissipated?

A. That is the junction of the two claims; the other to the north of that, everything is eroded.

Q. Suppose the vein had originally taken a position as shown by the pointer and parallel to the northerly side line of the claim, extending the vein as disclosed at W-prime in the apex drift in an easterly direction, the line indicated by my pointer would be the apex of your vein throughout this portion of the claim

1271 just as it is through the apex drift, would it not, in that supposed case?

Mr. GRAY: Read that question. (Question read.) I object; it it impossible to suppose such a case because of that fault.

The COURT: He can suppose a case. Objection overruled.

Mr. DINES:

Q. If we suppose now——

A. That the vein turned?

Q. Yes, sir, turned, and go along the surface of the ground indicated by my pointer through the point W-prime parallel to the northerly side line of the Senator Stewart Fraction claim until it crosses the easterly end line of that claim, would in your opinion in that supposed case the line indicated by my pointer be the top or apex of the vein.

Mr. GRAY: At the same elevation as in the apex tunnel?

Mr. DINES: It could not be anything else, could it, if I put it parallel with the northerly end line? I do not care whether it is the same elevation or not.

Mr. GRAY: The vein might have been intercepted upon its course along that line and that might have been the line of
1272 the fault.

Mr. DINES: Will the stenographer read the question, and the witness can modify it if he finds it wrong.

(Question read.)

The COURT: I hold that that is a proper question.

A. It might turn out to be in certain cases, but certainly not in this case.

The COURT: This is a supposed case.

Mr. DINES: This is a supposed case.

A. Yes, sir; there might be such condition, depending on your angle and your dip and your strike.

Q. Now, in addition to the supposition that I have just named, to-wit, that the portion of the vein lying nearest the surface at W-prime is simply exended along the line of my pointer and the dip is southerly or southeasterly, from that——

A. Southeasterly?

Q. Yes, sir, southerly or southeasterly; here would be southeasterly and there would be southerly.

Mr. GRAY: In other words, at right angles to the dip of the present vein?

A. At that angle it might turn out to be an apex. It has
1273 got to be determined by figures.

Mr. DINES:

Q. Now, assume that this portion of the vein is worn away by the forces of Nature until it comes down to the point taken by the pointer which is still passed through W-prime and also to raise 314 east?

A. Then the erosion has made an overhanging cliff and it would not be an apex.

Q. In considering that you would not consider whether the ero-

sion has put it in the form of the pointer at right angles to the point "W," or whether it goes at an angle greater than a right angle or less than right angle through the point "W"?

A. It depends entirely on the angles and the dips whether it is the under edge or the upper edge.

Q. Assume for your purpose that it is an apex as I have laid the pointer and it is worn away; I could cut it sixty degrees and it would still be an apex, wouldn't it—so that it makes an angle of sixty degrees with your former apex?

A. No, it would not.

Q. What would it be then?

A. It would be the lower edge.

1274 Q. At what angle does it cease to be a top edge and become a lower edge on the supposition I have made?

A. I think ninety degrees is the boundary.

Q. Ninety degrees is the boundary. Ninety degrees of what?

A. Ninety degrees between the strike of the vein and the strike of the juncture where the vein would be cut off.

Q. What is it if the line of your dip and the line of your intersection are parallel, assuming that you take the dip at right angles to the strike?

A. I do not think they could ever be parallel, two inclined planes.

Q. If they go down on parallel lines, they can be parallel, can't they? Suppose your line of intersection—that is in both planes, isn't it?

A. Yes.

Q. Why couldn't you have a parallel line in the plane of that vein—that line is in that plane?

A. Yes, sir, parallel in direction but not in dip, I mean.

Q. Parallel in direction?

1275 A. Yes, that is right.

Q. What would it be when it is parallel?

A. That would be on the ninety degree boundary line.

Q. Now, if it goes to the left of that, that is to say, to the east of that, what would it be as you go into the next quadrant?

A. Strictly speaking by mathematics it would be the upper edge then.

Q. As you go to the right from your line of parallelism it goes into another quadrant and there would be the under edge, wouldn't it?

A. Yes, sir.

Q. And you think that then explains and illustrates when by the processes of wearing away or cutting a line or cross edge may be by the angle of intersection changed to the bottom or side edge; is that right?

A. Yes.

Q. And then that angle as you go down from your point W-prime until you have that intersection in such form that it is either parallel to the line of your strike or converges with the line of your strike, it is still a top edge—or line of your dip, it is still a top

1276 edge?

A. If the included angle is less than ninety it is the under edge.

Q. It is the under edge?

A. Yes, sir.

Q. And if the included angle is greater than ninety——

A. Then it would be a top edge, strictly speaking.

Q. That approaches it from another way, but they would converge from parallelism before it would change. Now, have you formulated your mathematical proposition that you have just announced to the court, that is, that when the line of intersection is parallel to the dip of the vein, or when the included angle is less than a right angle, it becomes a bottom edge, have you formulated that proposition into your opinion that you have expressed here that the apex of the vein is not found within the Senator Stewart Fraction lines?

A. That is one of the reasons only.

Q. You concede, Mr. Boehmer, do you not, that you go up from the immediate portion of the vein underlying this intersection and between the two claims, if you wish to call them that, the vein and the fault, that in going from that line of intersection to the immediate vein beneath, you would go downward?

1277 A. Well, that depends in what direction; you can go down or up on a level.

Q. In going anyway from that line of apex as we claim it to the Ontario ore bodies you can take a downward course between the end line planes, can't you?

A. No, sir; it goes on a level into the Ontario.

Q. Do you refer to the four hundred level?

A. Three hundred.

Q. To the three hundred level?

A. Yes, sir.

Q. Isn't it a fact that there are a few feet of dip, that it is a few feet down?

A. It is close.

Q. But is it not true that at the point here that is shown on exhibit 1 as the point where the apex is disclosed at raise 314 east, it is a higher elevation than the Ontario ore bodies even on the same level?

A. I have not determined that by actual leveling, but to include the stop- of the Gray ore body I think that top of the stope is a little higher a few feet.

Q. The level itself goes into the top of the stope, does

1278 it not?

A. The stopes goes thirty feet above the level.

Q. How much of the stope is below where the 300 level comes in; how many feet of the stope?

A. The stope below goes down to the level eighty feet or so?

Q. Then it certainly would be a higher elevation than all those ore bodies in the stope, and that portion of it that is below——

A. No, the top of the stope would be higher than that level.

Q. There are points below it, too, aren't there?

A. Yes, sir.

Q. Then you have to take the very highest portion of the stope in order to get the level condition that you refer to?

A. No; you go on the strike on a level along the vein, nearly level, that is close enough; that means it is on the strike and on the direction of the vein.

Q. Take any other point of apex, take the points in the apex all along the apex drift and go down, is it a downward course to the Ontario ore bodies?

1279 A. It is as long as there is no raise made on the Frank ore body, as I explained.

Q. Is it down from the point where your Osborne fault cuts off the vein at the point "C" in upraise 218 east?

A. It is down as far as developed.

Q. Well, you have six cross sections that have been introduced in this case by plaintiff, haven't you?

A. I have.

Q. Have you found any mistake in those cross sections that you could point out?

A. No; I think that they are all right.

Q. Isn't it true that every one of those cross sections through the lines that have been given there show a downward course to the Ontario ore bodies?

A. Yes, sir, that is correct.

Q. It is also true that in those points—from these points where the Osborne fault cuts off the Stewart vein along the line of intersection that if there were a direct opening down between, a body would roll down into the Ontario ore body, would it not?

A. A ball rolling down a plane like that would take the
1280 steepest dip; it would not go on a diagonal, the ball would go on a true dip of the inclined plane.

Q. Have you examined the workings where they actually worked up those points of intersection in the stoping of ore and working of the Stewart mine?

A. Yes, sir; it is dragged up in the fault a little.

Q. They did go up to it, didn't they, in working that up?

A. Yes, sir.

Q. Upward to it?

A. Yes, that is right.

Q. And you climbed up when you went up to see them?

A. Yes.

Q. Had a good many ladders and raises to go through?

A. Yes.

Q. Now, you referred also to the model that has been introduced by the plaintiff in this case and I understood you to make some criticism of this model. I do not know just what the basis of it was. I will ask you if you did not, with the consent of the plaintiff in this case, take it apart and take those cross sections out and check them up?

A. I did.

1281 Q. Did you find any material departure from what you thought they should show?

A. No; the workings are correct and the fault is correct.
Q. And the fault is correct?
A. The vein is a little too thick, I think, at all places.
Q. Immaterial variations so far as that is concerned?
A. Yes.
Q. Mr. Boehmer, in the model you did, as I understand you, take some exception to the fact that the cross sections on the glass in this model were taken at right angles to the Osborne fault instead of at right angles to the vein?
A. No, I did not make that objection.
Q. That was not your objection?
A. No.
Q. Well, I will ask you, is it not a fact that where the object is to show the relations of the vein and the fault so far as they can be shown in the ground, that if you will take a cross section at right angles to the dip of the fault you will thereby get a clearer
1282 conception of their relations than you would if you took the vein?
Mr. GUNN: The strike of the fault.
Mr. DINES: The strike of the fault, I should have said.
A. No, sir, it would be misleading in both cases.
Q. Neither one would present it accurately?
A. In one case it would only present one accurately, and in another case the other one, but not both at the same time.
Q. Mr. Boehmer, admit that either one you adopt, if you take the plane of the cross section at right angles to the strike of the vein, you would at once be subject to the criticism that it won't show the fault in its correct position?
A. Yes, sir, that is why I objected to the whole model.
Q. And if you took it at right angles to the fault, you think there is some distortion in that way?
A. Yes, sir.
Q. For—So it is impossible then in your opinion to get a cross section anywhere that would correctly show those relations?
A. Yes, sir, with vertical sections you cannot do it.
1283 Q. You would have to take horizontal sections?
A. Yes, sir, or build it up in full.
Q. Have you examined the plans of the levels that the plaintiff has used in this case?
A. Yes, sir.
Q. Did you find any inaccuracy in them?
A. I think not.
Q. Do not those plans show those relations as we have introduced them here—is not that the horizontal plane?
A. Yes, sir.
Q. Now, in the model in question is it not true that in any model of this character, a glass model, where you have a grouping or assemblage of a number of cross sections, take seventeen cross sections, and you assemble them together, if you do not get, when they are so assembled, the lines of the veins through which they are

cut and the objects through which they cut, whatever the plane of the section?

A. No, sir, we do not, if you use vertical sections. You could do it if you show horizontal sections.

Q. Here are vertical sections, here are vertical planes
1284 passed along this line; I will ask you if in looking up in this model to the red and blue, if you do not get the line of the vein and the line of the fault at whatever angle to the vein or the fault you pass the vertical sections?

A. Yes, sir, but it is misleading because I can construct models which make the vein dip in the reverse way toward the fault.

Q. You could not do it if you had an assemblage of seventeen of your cross sections?

A. Yes, sir.

Q. And your cross sections were accurate?

A. I could do it with a hundred of them, yes; I could show it on that model, that I am right about it.

Q. Mr. Boehmer, have you ever looked through the model of the defendants taking the light and obtained the line that is shown by your intersection of your claim and vein so far as that model shows it?

A. Yes, sir.

Q. It does not look much like a side edge, does it, or a bottom edge?

A. Yes, it does.

1285 Q. You still think it does, do you?

A. I used that very direction on the model I introduced.

Q. Yes.

A. And I want to explain how I get the reverse models. Your model was taken in that direction, showing the vein dips away from the fault. The model that I say I can construct is to take a different angle and I make that vein dip toward the fault, so it necessarily must be misleading.

Q. You pass it on such an oblique angle that you would gain no benefit at all by your assemblage?

A. Take any angle you please.

Q. I do not think you understand me. My proposition is that if you take a line of cross sections, take a line of cross sections here, the purpose of which is to show lines—now, those cross sections are accurate, and you take seventeen of them across these bodies; I will ask you if looking in along the line of those cross sections and the bodies that they intersect, if you do not get the same line?

A. Yes, sir, from the way you look at it. If you look
1286 at it from the northwest you are right; if you look at it from the northeast, you are all wrong.

Q. Now, I will ask you, Mr. Boehmer, if you please, to look through the glass model exhibit 15-A and point out, if you please, or tell me, if you please, whether or not that does not show the downward course that you have referred to?

A. Yes, it does. It shows the downward course correctly in that model as far as it goes.

Q. Then you think that the vein actually in the ground from the point that we show on the first and the second and the third does go down as shown in that model?

A. On that particular section.

Q. Yes, sir.

A. But I can make it dip the other way by another model.

Q. You can, but this shows that fact that you have testified to?

A. That shows downward, yes.

Q. I will ask you also if the line formed by the different intersections of the vein with the Osborne fault is not the line that

1287 you think that intersection takes?

A. Yes; it is the same line which you have in your exhibit No. 3.

Q. Now, I will ask you if I take this pointer and thrust it through this model and lay it on the top of these glass sheets here of the red that is shown in these sheets, if it would not take the same line that you have just pointed to on your model; there would be very little, if any, difference at all?

A. Yes, sir, from this point of view it would show the same as on the model.

1288 Q. So that, if I take the pointer and put it down on these lines, we will have somewhat the same suggestion of the dip of that vein as it goes into the level, as you have given with your pointer on the model in this part here?

A. Yes, it agreed with that all right.

Q. In Defendant's Exhibit "X" where the red celluloid is placed in contact with the red and blue pieces of wood, which constitute that model, does not the line that is taken down there accord with the line that is taken for the red against the blue in plaintiff's Exhibit 15, and also in Defendant's model?

A. Very nearly, and I should think if that was figured out, you would get an undercut even then, because it is nearly parallel to the line of intersection as I have it.

Q. Yes, but I think the line here varies somewhat from it.

A. Very little.

Q. If that line in red varies from the blue here, you could easily have a side edge, or, as you call it, a bottom edge, transformed to a top edge, couldn't you, with a little variation in the line?

A. Well, this would be the lower edge of the vein, as I take

1289 it, should be taken into consideration, if the direction of the vein is taken as I have it parallel to the fault, then it would be a different thing entirely, then this is an apex.

Q. So the whole question comes down to the point of view that you take of it; if that intersection as it actually exists in the ground makes an angle of more than 90 degrees with the line of the natural apex that is admitted here, would you think it would be a top edge then and an apex?

A. No, sir, that is not enough.

Q. How much should it be?

A. I have another and better reason why that is not an apex, and

that is that I can start on the apex on the level for a thousand feet and come into the ore bodies in dispute.

Q. Well, you have seen that in other cases, haven't you?

A. Not where they were taken away, no.

Q. You have seen cases of an apex on a hill, a steeply sloping hill, where it is a flat vein and you find great variation, do you not?

A. Yes.

1290 Q. In that kind of case where you have a flat vein and a steeply inclined hill, you would find more variation in the course of your apex and in the strike of your vein?

A. Especially if it is intersected by gulches which erode it away.

Q. You have also known of cases where an apex admitted by both sides to be an apex, without any controversy, covers the same ore body?

A. Yes.

Q. So the fact that there might be in this ground such conditions of curvature that one segment of the apex might cover the same body beneath the ground as another segment of the apex, would not of itself deter you from calling both segments an apex?

A. No, sir, that is quite possible.

Redirect examination.

By Mr. GRAY:

Q. Relative to these things that are made to catch and deceive the eye, will you find Mr. Searles' cross section which shows the vein going on a downward course toward the Osborne fault, and section 4 presented by the plaintiff? Now, with reference to these

1291 sections, Mr. Boehmer, and to the sections that have been presented here by the plaintiffs, in referring to the mechanical accuracy of those sections, they are accurate as far as the openings on the vein are disclosed?

A. Yes.

Q. These projections and extensions of the red on there in the supposed position of the vein, what have you to say with reference to that?

A. I think that is correct, only a little too thick a vein.

Q. Can you take section 4, which is Plaintiff's Exhibit 4, showing the line giving a downward inclination to the vein from the so-called Osborne fault, extending over to the Ontario, and then take the cross section "XX", which is Defendant's Exhibit R, showing a downward course upon the vein from the No. 11 fault to the Osborne fault, and state to the court whether or not that assists you in any way in pointing out how you could make a model by simply screwing the sections around on different courses?

A. Those two sections prove what I asserted in making the models; reverse the case, and the relative position of the vein is there (indicating). In Mr. Searles' section the vein is shown on

1292 an angle of about north 40 east, I think, in direction, and it brings a downward dip toward the fault. I can make any

number of other sections, turning my line of section slightly to the west and getting a steeper dip, but all terminated downward on the fault, so I say that a model of that sort cannot determine anything.

Q. And if you take that the other way and wind that in a southwesterly direction, it would give the other apparent downward inclination?

A. The two contradict each other.

Q. Yes. Mr. Boehmer, in determining the course of the vein as disclosed upon the models and reduced to a plane with a given course, did you take into consideration such change in the course as the vein showed between the points along which you took the course of the vein as disclosed by the workings?

A. I took the main line of the entire workings.

Q. And that curve, w-at ever it may be, or departure from a straight line, has been reduced from the plane of the average course as shown upon your models?

A. Yes.

Q. Now then, I understood you to say that you took the
1293 course of the Stewart vein on the Stewart tunnel level of approximately 900 feet?

A. That is right.

Q. Within about 30 feet of the so-called Osborne fault as painted and portrayed by the plaintiff in this case?

A. Yes.

Q. Scale that red on your model, if you please?

A. You cannot apply a scale to that.

Q. Scale it on a basis of 900 feet, assuming that that is 900 feet long.

Mr. DINES: The witness was not asked anything about scaling it. I asked him if he had scaled it, and he said no, and I never asked him another word about it.

Mr. GRAY: I am showing again the relative attempt to deceive the eye.

Q. Please scale it?

A. Well, it is seven inches.

Q. And reducing that to a distance of 930 feet, which would be the distance, approximately, from the vein in the south face of the Stewart tunnel to the Osborne fault on that level, and taking 900 feet out of that 950 feet, and scaling it proportionately, you
1294 would get this how close to the Osborne fault, assuming that you have taken the course that this represents, 900 feet for the red; where would the point 50 feet from the blue be?

Mr. DINES: We submit that that does not prove anything, and does not show anything that was brought out on cross-examination.

Q. The 50 feet would be one seventeenth of the distance, wouldn't it?

A. Yes.

The COURT: This is subject to cross-examination. I will permit it.

Q. Now, as they have attempted to place the vein against the so-

called Osborne fault along the course of the fault on this little model, again using the same scale, how far out along the course of the fault did they extend it with this curved course?

A. About 300 feet.

Q. In other words, they bent the vein against the fault for about 300 feet on this little model?

A. Oh, there is nothing like that, no, sir.

Q. Is there any such condition as they have portrayed there by putting the celluloid in your little model appearing in the
1295 ground?

A. No, sir. The vein is right here on the strike of the fault; it abuts against it.

Q. There was some question asked you with reference to following over from this Osborne fault where the vein is terminated on its onward course. On the 300 level by going into the top of these ore bodies, and you were interrogated as to whether or not portions of the Gray and the Frank were below the level of the 300 which you have followed on approximately a level, I understood you to say, from the Osborne fault to that?

A. Yes.

Q. And I understood you to say that portions of that are above and portions of this ore body below?

A. That is right.

Q. And if those ore bodies continue downward on their present dip, they will still be lower?

A. Yes.

Q. So, that has nothing to do, then, with the question whether or not they are at a higher elevation or a lower elevation than the point where you start in on your 300?

1296 A. No, they meet the stopes in their course.

Q. And the vein rises from there on its dip?

A. Possibly to the surface.

Mr. GRAY: There is one question I wish to ask, but I don't know but what I should have asked it in direct.

Q. Does this drift No. 5 east and No. 5 west represent the course of the Stewart vein?

A. No, sir; I think it is unfair to take that into consideration, just as it would be unfair to take the 400 level into consideration, because that vein has been cut up so much in that neighborhood, in both neighborhoods, that it would be unfair to take that into consideration.

Q. That is in reference to the fault that you have heretofore referred to?

A. Yes.

Q. Mr. Boehmer, you have determined the course of the Osborne fault and its dip, as I understand?

A. Yes.

Q. If a plane were extended indefinitely into the earth, a vertical plane, in the direction of the dip of the most westerly ore bodies,

would the plane of the Osborne fault, extended downward into the earth, intersect that plane in depth?

1297 A. It would; it would cut off the vein into the shape of a triangle.

Recross-examination.

By Mr. DINES:

Q. In the instance that you just gave, both the Osborne fault and the vein are supposed to be indefinitely extended to the south, do you think the Osborne fault would still continue to cut off the vein?

A. Yes, it would.

Q. Now, the Osborne fault will continue indefinitely in depth to cut off the Stewart vein, will it?

A. In depth, I think it will, yes.

Q. Now, what would be that edge of the vein away toward the center of the earth?

A. That would be the under edge of the vein cut off completely.

Q. It would be the under edge of the vein, wouldn't it?

A. Yes.

Q. What would be that edge over to the west?

A. That would be the same thing.

1298 Q. That would be an under edge?

A. Oh, under the Clancy fault, you mean?

Q. Yes.

A. No, that would remain the apex.

Q. You think that is the apex?

A. It is the apex of the vein, for that distance, yes.

Q. And that between the place where the Clancy fault cuts it and the Ontario away down to the southwest, what kind of edge would that be?

Mr. GRAY: I object. There is no evidence as to the relation between the Clancy fault and the Ontario fault in this case.

The COURT: There are so many suppositions in the case, that I shall overrule the objection.

Mr. GRAY: That is not a question in this case. Counsel is simply seeking a little information about something else. Will your honor kindly hear me on that?

The COURT: Yes.

Mr. GRAY: There are other cases elsewhere pending between these parties that may involve some such considerations, and I don't think that in this case some fault which has not been developed or

1299 some portion which may exist away over in here is proper in cross examination of this witness. I alone interrogated him with reference to a vertical plane drawn downward through the southerly face of the present ore bodies, and the plane of the Osborne fault continued downward as they appear along in here.

The COURT: I understand that.

Mr. GRAY: Now they are trying to take him away over to this country to the south.

Mr. DINES: I submit that wherever there is a subject of inquiry relative to a solid body, that is supposed to have four terminal edges,

it is supposed to have some terminal edge where it comes near the surface, it is supposed to have some terminal edge where it ends nearest the center of the earth, and it is supposed to have not an indefinite extension east and west but some term, and all the authorities I think, are agreed that there is a termination of these matters. So, when he refers to one edge, it necessarily involves the other edges. He asks about a triangle down there, being an extension of this, and I am simply carrying the inquiry on further along the line of the last question asked the witness.

1300 The COURT: I have been very liberal in regard to cross examination. I have not limited you to matters brought out on direct examination, but in regard to this being pertinent as a subject of cross examination, I should have sustained the objection. I overruled the objection on the ground of the liberal manner in which I have treated counsel on both sides, but if there is some other matter involved. I shall hold that this is not proper cross examination and sustain the objection.

Mr. DINES: I don't wish to ask any questions that your honor thinks is an improper question and one that should not be answered, but I asked this question because I believed it was pertinent, that where one gives a definition of one edge, that that necessarily involves the definition of another edge down here.

The COURT: That is true, but he makes the objection that it is not cross examination, and not limited to the direct examination, and as to this question of the Ontario fault matter, that was not gone into on direct examination.

Mr. DINES: That is correct, your honor, I believe.

(Objection sustained. Plaintiff excepts.)

1301 Q. With reference to the triangle that you have made by the plane that counsel directed your attention to, you say it will cut off that vein indefinitely, the Stewart vein, in the form of a triangle?

A. Yes.

Q. Please name the sides of that triangle?

A. Well, the line given was a line at right angles to the strike of the vein at the end of the Frank ore body. No dip was given in any direction.

Q. Well, that is one side of your triangle, isn't it?

A. Yes.

Q. Now, what is the other side of the triangle?

A. The other side is the fault, the main fault.

Q. The Osborne fault?

A. And the third side is the apex under the Clancy fault.

Q. That makes the triangle?

A. That would make the triangle.

Q. Now, how about the line between the Clancy fault and the intersection with your other line constitution a triangle here?

A. That depends entirely upon the dip of that plane given me, if it dipped to the south it would give an entirely different result that it would give if it dipped to the north.

1302 Mr. GRAY: It was a vertical plane I gave.

WITNESS: And a vertical plane I answered.

Mr. DINES:

Q. And you would have one line that would be that plane, and another would be the Osborne fault?

A. Yes.

Q. And the third line would be a line drawn between where the Clancy fault cuts off the vein and what other point?

A. Well, it would follow the entire apex under the Clancy fault; that would be the third side of the triangle.

Q. How far would you follow that?

A. Until it strikes the plane given me.

Q. Do you know where that would be with reference to the line of the Senator Stewart Fraction?

A. It would be, roughly, 200 feet to the south of the upper Stewart workings; that is one side of the triangle. The apex is the other side, and the third would be the intersection of the fault with that plane on the dip.

Q. The dip that you give to that fault in this model is not the dip that you have used in your models, is it?

A. Yes, it is.

Q. Please give your measurements along here, and see if it is; take your dip, and take the dip on the model?

1303 A. The one on the large model will average 60 degrees, warped as it is.

Q. Put it along this right here, and see what it is, putting it on the 400 level?

A. Well, it is much steeper there; it is 70 degrees on the east end, and less than 60 degrees on the other end.

Q. It is 70 degrees here, and in your calculations you have taken what?

A. I have taken fifty-eight and twenty-four hundredths.

Q. That you got from there on the other side?

A. No, that is calculated from the other dimensions given. I have got three or four dimensions given, and I calculated from them and from the fault, from its dip that way.

Q. I will ask you if on this model, Defendant's Exhibit L, the Osborne fault is not shown on this model to dip at the angle that you have adopted in your model?

A. Not at that point; it does at other points.

Q. What is the difference between the dip shown on this model and that on your *w*odel?

1304 A. It is 10 degrees at the east end, it tallies in the middle and is flatter on the west end.

Witness excused.

Mr. GRAY: That is our case, your honor.

(Defendant rests.)

Whereupon further hearing was adjourned until Thursday January 16th, 1913, at 10 o'clock a. m.

1305 *Plaintiff's Rebuttal.*

10 A. M., THURSDAY, *January 16th*, 1913.

ALFRED FRANK, recalled for Plaintiff in rebuttal, testified as follows:

Direct examination.

By Mr. GUNN:

Q. Mr. Frank, directing your attention to the drift on the Fir tunnel immediately below raise 415 East, I will ask you whether or not there was any drag ore disclosed in that drift?

Mr. GRAY: We object to that on the ground that it is not rebuttal. That drift and that particular place was gone into on the direct examination in this case. Now, if we are going to try the case over again and have them go back and receive testimony that has been given, I know not where the end will be. These are the places of inquiry in this case, and they have described what they had there. They have presented a model in which Mr. Frank has attempted to show what is at that particular place, and Mr. Wiley has said that something else was there.

The COURT: There was nothing developed on the examination in chief about drag ore at that point, but it developed in the
1306 testimony of the defendant. I think it is proper rebuttal.

(Defendant excepts.)

A. The ore disclosed in that drift is not drag ore; it is ore which is in place and continuously in place in the vein. That ore is plainly shown by a photograph which I took of that vein, that is, of the extreme easterly face of that drift, and the ore shows in that photograph to have an actual definite width of 42 inches. All of that total width of 42 inches, is ore of very good grade, and it is ore which is place and does not exhibit any evidences of drag.

Q. Now, directing your attention to Defendant's Exhibit K, I will ask you if you have taken the dip of the vein at the place represented by this picture or diagram?

A. I have.

Q. I will ask you whether or not there is any place depicted upon this sketch where the vein has a dip of 19 degrees?

Mr. GRAY: That is objected to on the ground that it is not rebuttal. Mr. Frank went into that crosscut himself on his former examination, and testified that the ore there had a certain dip at that very point, and Mr. Wiley subsequently went upon the
1307 stand and presented that sketch and gave his testimony as to that particular place. Mr. Frank gave before what he found to be the pitch of the ore there.

Mr. GUNN: I beg to differ with counsel. There has been no testimony introduced as to the dip of the vein shown upon this sketch made by Mr. Wiley.

Mr. GRAY: I have not had a copy of the daily testimony, but I will find it if you produce it for me.

Mr. DINES: I never heard, even in a jury trial, or a rule as to rebuttal such as is insisted upon, seemingly seriously, by opposing counsel. Mr. Wiley identified the sketch. I don't care whether our witnesses testified to the dip at that place or not. He testifies to a sketch and a dip. Cannot we contradict that?

Mr. GRAY: Mr. Frank testified to the dip at that very spot.

Mr. DINES: Suppose he did? I agree with Mr. Gunn that he did not; I don't recall any such testimony; but even if he did? When Mr. Wiley comes in here with a sketch and says the dip at that place is 19 degrees, we have a right to rebut it.

The COURT: Yes, I shall overrule the objection.

1308 (Defendant excepts.)

A. The sketch shows the dip of the hanging wall of the ore streak to be 19 degrees, and I think that the testimony was that the maximum dip at that point was 19 degrees. The dip which I observed at that identical point, and made a note of it in my note book, was 37 degrees. I have a photograph taken of the same identical working of which this sketch purports to be a representation, and the ore streak as shown on that photograph measures approximately in accord with the dip which I measured by means of a clinometer at that point.

Q. The photographs that you refer to are the photographs that were presented to Mr. Wiley during his examination, and which were marked Plaintiff's Exhibits Nos. 18 and 19 for identification?

A. Yes. The photograph which was presented during my examination and marked Plaintiff's Exhibit No. 16 is also a photograph taken at a distance not to exceed 20 feet from this same identical spot, and that shows a dip very much in excess of 19 degrees.

Q. What have you to say, then, with reference to this

1309 sketch presented by Mr. Wiley showing a dip of 19 degrees for the vein at that point being a correct picture of what is disclosed in the ground at that point?

Mr. GRAY: I again offer the objection that it is not rebuttal.

(Objection overruled Defendant excepts.)

A. I don't believe that that is a correct picture of the conditions exhibited or exposed in the ground at that point.

Q. Now, calling your attention to Defendant's Exhibit Y. I will ask you what you have to say with reference to that model being a correct representation of the vein as it appears in the ground and of the intersection of the vein with the Osborne fault?

A. That model is not a correct representation of either the vein or the relation of the vein to the fault as it actually exists in the ground. The intersection of the vein with the fault is exposed and developed practically continuously in the ground; that is, we have on the 400 or Fir tunnel level, on the 300, on the 200, on the 100, on the lower Stewart tunnel level, and on the apex drift, the actual intersection of the vein with the fault developed, and

1310 from and at each opening these points determined, and at these points of exposure the angle of intersection can be

and has been determined and can be actually measured on the map. This model, which purports to represent the intersection of the vein with the faul-, shows a straight line, for both the vein and the fault,—and shows an absolutely straight line of intersection, and that is not the case. The vein, before it reaches and is intersected by the fault, takes a decided bend to the east, and makes, instead of the plane of intersection shown on this model, Exhibit Y, a very sharp acute angle in the actual intersection of the two, that is, the vein and the fault in their easterly course.

Q. What have you to say with reference to this Exhibit X; they are the same?

A. Exhibit X, I see, has on it the small piece of red celluloid which I was asked by Mr. Dines to place thereon yesterday, and I will add that the position of the red celluloid there, while not exactly to scale, as in fact the entire model is not—the red celluloid more nearly, and in fact very nearly represents the actual true conditions as they exist in the ground.

1311 Q. And what have you to say as to the dip of the Osborne fault corresponding with the dip of the fault as depicted by this model at the intersection?

Mr. GRAY: I object to that. Mr. Frank gave the dip and strike of the Osborne fault on direct testimony.

(Objection overruled. Defendant excepts.)

A. The dip of the Osborne fault as marked on that model is 58 degrees 34 minutes (58′ 34″). I will say that the taking of a dip with such a degree of accuracy and applying it to a measure, a plane or development which exists in the ground covering many hundreds of feet both up and down and laterally, is an impossiblity and it in facts approaches an absurdity. That dip varies a great deal, and to ascribe to as large and as well developed an exposed geological measure as the Osborne fault a dip of 58′ 34″ is an impossibility. It might be possible at some point for a short distance, at some point of exposure in the ground, to measure a dip that would correspond to that, but it would by no means represent the actual true dip of the fault as it exists and has been developed.

Cross-examination.

By Mr. GRAY:

Q. What is drag, Mr. Frank?

1312 A. I consider drag to be in the case where a vein is faulted—I consider drag to be parts of that vein which have been carried beyond the broken or cut off edge and end of the vein into the fault.

Q. Does it make any difference how far they are carried?

A. Not at all, but I do not consider drag as being a part of the vein which has remained a part of the vein, that is, where the vein can be followed continuously to its end, even though that vein may be bent around, if you wish to use the term bent. I do not consider the bent portion as being drag.

Q. Even though it is displaced and moved along in the fault and by the fault?

A. Even though it is displaced and moved by the same force which caused the fault, I would not consider that drag unless it were detached from the vein and carried along into the fault and separated entirely from the vein.

Q. By "separated entirely from the vein" what do you mean?

A. Well, I don't know how I can express it more clearly; it means that the particle separated from the vein, that it is
1313 removed from attachments and continuity with that vein.

Q. I hand you a specimen which I will have marked for identification Defendant's Exhibit "Z." What is that?

A. It looks like a piece of ore.

Q. What kind of ore?

A. It is ore in part such as we find in this ground?

Q. Is that drag?

A. Seeing it in this manner I would not necessarily say so, no, sir.

Q. You are unable to tell by looking at it?

A. By looking at a small piece of ore like that I would not say that it is drag.

Q. You are unable to say whether it is or is not?

A. Yes, because to my mind the definition of drag would apply and could only be applied to the ore depending upon how it was found. I think that the characteristics are found in the ore that is essentially drag ore as I understand the term, may also be found at times in particles of ore actually in place in the vein far away from any large fault, therefore any piece of ore which you might exhibit to me in this way I would not necessarily recognize it as drag, because it may come out of a part of the vein which
1314 had never been disturbed by one of these major faults; that is, there are local disturbances in and within veins at times which cause particles of ore to assume and have the same characteristics as drag ore carried long distances within a fault.

Q. And that is your qualification of what may be held to be drag?

A. (No answer).

Witness excused.

1315 WILLIAM CLANCY, recalled for Plaintiff in rebuttal, testified as follows:

Direct examination.

By Mr. GUNN:

Q. Mr. Clancy, directing your attention to the drift on the 400 immediately below the raise 415 East, I will ask you whether or not there is any drag ore disclosed in the face of that drift?

A. There is not.

Q. Did you hear the testimony of Mr. Wiley?

A. I did.

Q. Did you hear what he described as drag?

A. I did.

Q. What have you to say with reference to that being drag?

A. I do not agree with Mr. Wiley on that subject. There is the extension of the vein which can be followed from the vein which has been stoped with no break in the continuity of the ore.

Q. Have you taken the course of the Stewart vein below
1316 the surface of the Senator Stewart Fraction claim from the termination along the Osborne fault to the south side line of said claim?

Mr. GRAY: That has been gone over; Mr. Clancy gave to me on his cross examination originally, and he went into all of this in chief. It seems to me there must be some limit, and it is not rebuttal.

The COURT: I think that that has been developed very fully. I may be mistaken in my recollection.

Mr. GUNN: I beg your honor's pardon. It was developed by Mr. Searles on cross examination. Mr. Clancy did not give those courses on his direct examination, and as a matter of fact Mr. Clancy made the statement that you could not take a strike along a crescent.

The COURT: I remember that. However, I will overrule the objection to save time. I am not clear in my own mind.

(Defendant excepts.)

A. I have taken those courses.

Q. How did you take those courses?

A. As I explained, upon my direct examination, it is impossible to give a course or a general course representing a crescent; that is like a railroad curve; you would have to give the distance on
1317 the straight line which this curve takes, in order to determine its position. I have taken, measuring from the south side line of the Senator Stewart Fraction, on each level of the mine where the vein has been developed, and measured off each 100 feet or thereabouts along the footwall of the vein as shown upon our individual level maps which have been placed in evidence and added those courses and divided by the number of the courses taken on each level, and obtained a course in that way which is approximately the course of a line from the point that the footwall of the vein crosses the south side line of the Senator Stewart Fraction to a point where the footwall is terminated against the Osborne fault.

Q. I understand that you have taken the courses in 100 foot sections?

A. Yes, or as near thereto as possible.

Q. And then you averaged those courses as taken on each level?

A. Yes.

Q. Will you give us the general course that you obtained by the method that you have pursued on each of the levels?

A. Well, I wanted to explain before I am stopped there—
1318 that it needs something further in order to determine it.

Q. Go ahead.

A. The general course as determined in that way on the old Stewart tunnel level is north 67 degrees east; on the 100 foot level it is north 55 degrees east; on the 200 level it is north 54 degrees east; on the 300 level it is north 50 degrees east, and on the 400 level it is

north 56 degrees east. On the old Stewart tunnel level, measuring along the line which joins the end of the curve and represents the foot wall at a distance of 330 feet from the south side line of the Senator Stewart Fraction, the curve lies in a northwesterly direction from this straight line a distance of 150 feet. On the 100 foot level under the same conditions, at a point 60 feet from the south side line of the Senator Stewart Fraction, the footwall is approximately 45 feet in a northwesterly direction from the line described. On the 200 foot level at a point 105 feet northeasterly from the south side line of the Senator Stewart Fraction the footwall lies in a northwesterly direction 60 feet from the line joining the ends of the curve. On the 300 foot level at a point 110 feet from the south side line of the Senator Stewart Fraction the footwall lies in a northwesterly direction 20 feet from the line joining the ends of the crescent.

1319 On the 400 foot level, as shown by Plaintiff's Exhibit 14, the course which I have given as north 56 east represents a line drawn from the termination of the footwall against the Osborne fault in a northwesterly direction to the point where the footwall crosses the south side line of the Senator Stewart Fraction, at a point 160 feet from the south side line of the Senator Stewart Fraction, the footwall lies in a southeasterly direction a distance of five feet.

1320 Cross-examination.

By Mr. GRAY:

Q. I want you to take the Stewart tunnel level and divide into sections of one hundred feet each from the point at the bottom of raise 4 east to its south face?

Mr. DINES: We object, your honor. He wants this witness to divide this into sections from this point to the face. Now, I submit he has no right to ask this witness to do that; the witness has not testified to it in rebuttal at all.

The COURT: I shall overrule the objection.

Mr. DINES: Note an exception. We claim they have gone into that in their part of the case and it is not cross examination of this witness.

The COURT: You may go ahead, Mr. Gray.

Mr. GRAY:

Q. Go ahead.

A. Before I do that, if you expect a sketch of the course I have given through the footwall as shown upon this map, shall I use this map?

Q. You may use this map.

A. The footwall is not marked upon this map.

Mr. DINES: I submit he cannot contradict the witness in

1321 that way.

The COURT: He cannot contradict the witness in that way; he can only contradict him by showing it on the footwall which is not shown on that map.

Mr. DINES: Then it is original evidence which this question calls for.

The COURT: I am inclined to think he can only cross examine on the footwall.

Mr. DINES: I ask that it be limited to that and therefore object to the question.

The COURT: I shall sustain the objection.

Mr. GRAY: I show your honor the character of the evidence they are producing here.

Mr. DINES: Your honor, I object to the denunciation of this counsel during this case in the way he keeps reiterating and putting his construction upon our evidence and showing the character of it to your honor.

The COURT: It does not hurt you gentlemen a bit so far as this court is concerned. I do not — what effect it will have on the record.

Mr. DINES: I ask your honor to request counsel, because it will certainly contribute to harmony during the trial, that he
1322 desist from comments on the evidence, and I do not wish to be understood as being discourteous at all.

Mr. GRAY: Because of your greater age I have permitted you repeatedly during this case to speak to me in a way that I would not otherwise permit counsel.

The COURT: I shall stop any further controversy between counsel. We have had sufficient already on both sides.

Mr. GRAY: You have attempted to give to his honor average courses of what has been painted the footwall upon the exhibit No. 10?

A. Yes, sir, and I so specifically stated.

Q. Just lay those off on there?

Mr. GUNN: Mr. Gray, could we not expedite this by having you continue your examination of Mr. Clancy and let him make that calculation for you and recall him?

Mr. GRAY: No, I would like to finish with him right now, Mr. Gunn.

Q. Have you given that, Mr. *Calcny?* Just extend it down. I will now start at your most southerly point which is but a
1323 short distance from the face of that little crescent near the south end of the Stewart tunnel level?

A. Do you want an average of those?

Q. No. For the first hundred feet as marked on there is there any working which discloses what you have termed the footwall of this vein?

A. For the first hundred feet——

Q. Just answer that yes or no and then you may explain.

A. Yes.

Q. Where is it?

A. In the working which is shown south, running in a southerly direction from the raise marked R No. 7, there is a lateral, more in the nature of a crosscut; it is called a lateral. There is a galena, deposition of ore, and speaks of galena back from the drift for a dis-

tance of twenty or thirty feet, and that gave us the information from which the footwall was placed on there.

Q. Your first hundred foot mark is south of that allege*l*ed level, isn't it?

A. A distance of three feet.

Q. Yes, sir. In the course of that 100 feet there is absolutely no opening upon this alleged footwall, is there?

1324 A. Technically there is nothing upon that hundred feet which we could actually see.

Q. All right; take the next hundred feet, and this lateral which you have spoken of is the only working which penetrates beneath the vein, isn't it?

A. On that particular elevation that lateral is the only working that penetrates the vein.

Q. And what you have painted in red upon this exhibit as the footwall is not shown except where you claim that lateral cuts it in that level and in that hundred foot section, isn't that true?

A. The position of the ore is nearer the footwall than that lateral.

Q. I say, within that hundred feet that is the only opening upon what you have painted and portrayed and called the footwall upon that exhibit?

A. On that particular——

Q. Just answer my question.

A. Yes.

Q. I did not want to cut off your explanation, if you have one to make to the court.

1325 A. I have explained before how these things were made; we were justified in doing that because of our working on the pay streak, and the stopes at this particular point are within twenty feet——

Q. That is in the Stewart tunnel level?

Mr. DINES: Wait a moment; let the witness explain. Let him finish his explanation.

A. That is in the Stewart tunnel level, and in the level, the mineralization is shown back as far as I have shown it, and in several places, and therefore we knew the mineralization did extend in the footwall for the distance I have told you about, and therefore we are justified in placing the footwall as we have done.

Q. Take the next hundred feet; it is intercepted by what working, if at all—a dotted red footwall you have painted on this exhibit?

A. By a working on the old lower Stewart tunnel.

Q. How far from station 9514 along that tunnel in a westerly direction?

A. A distance of twenty feet.

Q. Do you say that a distance of twenty feet westerly along that crosscut from the station to which I called your attention

1326 the vein extends on that level—answer that question Yes or No?

A. The vein as I have defined it does extend——

Q. On that level?

A. Just the way it is painted upon that map.
Q. On that level?
A. Yes, sir, on that level and every other point you take there.
Q. That point twenty feet westerly along the Stewart tunnel crosscut back into—before you come to the footwall of the vein?
A. Just in the way which I have described, we are justified in placing that footwall there.
Q. Take the next 100 foot section?
A. The same thing applies to the next 100 foot section.
Q. Just one opening on it?
A. There is one opening there.
Q. Take the next one, there is not any, is there?
A. It lacks two feet.
Q. Well, there is not any, is there, in that 100 feet?
1327 A. No, there is not any.
Q. All right; take the next one? Where did you go then?
A. Along the footwall of the drift.
Mr. DINES: One moment. If you wish to explain there, you can, about why you placed it there where you say there is not any.
A. I have gone through the explanation so many times.
Mr. DINES: Explain it; if the counsel reiterates, you will have to give your explanation; we want it.

Mr. GRAY: Wait a moment; if the witness desires to explain, he can, but to have Mr. Dines repeat it, I have listened to his repetition here about two weeks and that is enough.
Mr. DINES: I think I have a right to tell the witness——
The COURT: I think I understand it sufficiently.

Mr. GRAY:

Q. Go on with the next hundred feet.

Mr. DINES: One minute; I would like to ask if Mr. Clancy desires to explain any further.
Mr. GRAY: Just proceed, Mr. Clancy.
Mr. DINES: One moment.
Mr. GRAY: The court has passed on the objection.
1328 Mr. DINES: I did not understand his honor to rule on it.
The COURT: I will permit Mr. Clancy to explain, if he wants to.

A. The footwall of this hundred feet is placed at a distance of approximately twenty feet in a northwesterly direction on the drift which was driven along the pay streak of the vein, and we know from evidences which I have heretofore explained that the mineralization exists in the footwall and therefore we were justified in placing the footwall as shown on this map.
Q. Just one moment. Why did you have justification for saying that the footwall has a different course in that hundred feet than the Stewart tunnel level.
A. Which hundred feet?
Q. The one you have just mentioned?
A. Because the Stewart tunnel level as driven between survey

points 9520 and 9581 is in the end of a crosscut and crosses the vein and does not extend right on the vein there.

Q. How do you know that the footwall has the exact course
1329 which you have given to it by your painting upon this map through hundred foot sections upon which there is no working.

A. The exact location of that footwall cannot be obtained by anybody, therefore we painted it in the way we did.

Q. And therefore in giving this average you have taken what you have painted, assuming that the footwall is as you have painted it?

A. We took it for each hundred feet; that is the nearest we could get to it.

Q. Now, we have for a hundred feet ore practically exposed along that drift on the fir tunnel level?

A. Yes.

Q. What is the course of the footwall as shown upon that level for that hundred feet?

A. For the hundred feet which is shown approximately between survey points 9581 as marked upon plaintiff's exhibit 10 and survey point 9522 the course of the footwall is north 35 degrees east.

Q. All right. Now, take the next hundred feet. Have you
1330 any working upon what you have painted the footwall there?

A. We have.

Q. The Stewart tunnel level, for a distance of approximately fifty feet to the bottom of that shaft?

A. To the bottom of the raise on the map.

Q. Then there is no working from there——

A. Shall I explain?

Q. I am perfectly willing, if you will just tell me whether there is any opening upon this alleged footwall?

A. Upon the old lower Stewart tunnel there is not. Our information from which we placed the footwall upon this level, there being no working upon the old lower Stewart tunnel level to show it, was obtained from the stopes which extended in the direction as shown through the letters "AC" in the word "Fraction" of "Senator — Fraction" on plaintiff's exhibit 2.

Q. How far were those stopes from this alleged footwall at that point?

A. The stopes were at a distance of fifteen feet above the old lower Stewart tunnel level.

Q. These are the stopes right in here that you are pointing to?

1331 A. Yes, sir.

Q. Give me the course of those stopes that were within fifteen feet. Is that a fair course that you are giving of those stopes?

Mr. DIXES: I submit, your honor, if Mr. Gray wants to testify, he can take the chair.

Mr. GRAY: Your honor can see that he was starting in at the footwall and taking the diagonal course——

The COURT: Let Mr. Clancy answer the question without any criticisms as to the manner of cross examination, and he can find out if he is doing it right.

Mr. GRAY: This course that I want is right in there, Mr. Clancy?

A. I will make it just to suit you.

Q. No, make it to suit yourself.

Mr. DINES: That is what I objected to. Mr. Gray ought to be sworn if he is going to testify.

Mr. GRAY: If I did I would not start in on the footwall and go across diagonally.

A. North thirty degrees east.

Q. North thirty degrees east.

A. I will give you some additional evidence for placing
1332 the footwall as I did. Near the survey point 9962, or as near as we could determine, the footwall was shown in a working marked Deering crosscut, and the stopes as shown upon the map have a slight bend in them, therefore we painted the footwall——

Q. The footwall was disclosed there, and it was again disclosed I understood you to say, actually upon that lateral to raise No. 7 east. Give the course between those two points where you have actually found it?

A. I have given you that course in the direct examination as north thirty degrees east, between points 9562 and 9530.

Q. There we reach the point where you say the vein flattens out. I understood you to say in your direct examination that in this area between the Stewart tunnel level here near the Deering crosscut and this drift 5 west and 5 east is what you call a fold in the vein?

A. Yes, sir.

Q. And the other courses that you have attempted to inject into your average are courses which you have taken in what you call the fold of the vein?

A. Not at all.

1333 Q. Along what you have termed the footwall through the fold of the vein?

A. No, sir.

Q. All right; show his honor.

A. I certainly will. There is where the fold begins. I can show it better upon the stope map. The stopes are coming down from the top of the stopes underneath the apex drift and strike the tunnel level; there is the footwall which was taken; the fold lies south of that.

Q. Yes, sir. And you have taken all this dotted red line where no one knows where the footwall is from a point approximately 2090 on down for 250 feet from there, haven't you?

A. That is the next place we had the vein.

Q. You have taken 100 foot sections in your average along that dotted red line, haven't you?

A. I have.

Q. Yes, sir; and that dotted red line runs through what you have termed the fold in the vein, doesn't it?

A. I beg your pardon; I thought when you were asking me the question about the average you were asking me about the por-
1334 tion marked drift 4 east. If you were asking about that——

Q. Yes, sir, the dotted red line?

A. I did take the course along that footwall to the next place we had the vein and the apex exposed.

Q. This same principle which you have applied to the Stewart tunnel level you have applied to these other levels in taking the same course; is not that true?

A. In getting your averages, yes, sir, I have taken the footwall just as shown upon these individual level maps which I thought was the actual location of the footwall.

Q. Yes, sir; as painted by Mr. Winchell or some one under his direction?

A. Mr. Winchell's notes, Mr. Greene's notes and all of us, from observations which we have taken and proved and gone back and looked over it and found the vein—it is from the facts in the ground which that footwall is painted.

Q. But your courses are taken from the painted line shown upon these maps?

A. Necessarily.

Q. There is just one more question; I wish you would
1335 give this average course down along 2090 along the dotted line where no one knows where the footwall is and where it passes through what you have termed as a fold in the vein.

Mr. DINES: I object to the language used in the question just asked, "where no one knows where it is."

Mr. GRAY: Except Mr. Dines. The witnesses have all declined to state the place.

Mr. DINES: Your honor, I submit that there is no occasion for that, and I ask a ruling on that question. I ask a ruling because I believe the question is erroneous. I think it contains matter that no counsel is permitted to put in a question. If the witness answers that, it looks in the record as if the witness possibly had adopted the insulting and discourteous language that I claim is in that question.

Mr. GRAY: I did not intend it as insulting or to be discourteous to the witness.

The COURT: I disagree with you Mr. Dines. It may be a false assumption in the question. I do not know whether there is——

Mr. DINES: Will the stenographer read the question please, so we can have it exactly before his honor?

1336 The COURT: I remember it. "Which no one knows" is the objectionable part.

Mr. DINES: Yes, sir, "where no one knows."

Mr. GRAY: Mr. Clancy has said that that is true.

Mr. DINES: Now, I say that is a comment not permissible in a question.

The COURT: If that statement is incorrect, Mr. Clancy has an opportunity to correct it.

Mr. GRAY: You can correct it, if you want to.

Mr. DINES: No, I do not think Mr. Clancy can correct counsel's question. My objection goes direct to the question, and I would like to have your honor rule upon it.

The COURT: I shall allow the question. On cross examination

I am not going to criticise every question that is asked or we would never get through some examinations which I have known, not this one, perhaps.

A. South 45 degrees east.

Mr. GRAY:

Q. That is not open through there, is it?

A. Along the footwall which is marked in a dotted line the ground is not open. We have an opening here of from 20 to 50 feet.

1337 Q. That is in what you call the east No. 3 crosscut?

A. Yes, sir.

Q. And the dotted red line is put on there for the very purpose of showing that there is no opening along there?

A. The opening is not there.

Q. And no one can place where the — place where that footwall as you call it is.

A. Absolutely determined by seeing it, you cannot.

Q. No, and that is the reason you have so painted it upon the map?

A. That is the reason it is dotted, because we have information to place it therefrom.

Mr. GRAY: That is all.

Redirect examination.

By Mr. GUNN:

Q. State whether or not there are any waste raises along the hanging wall or footwall, crosscuts, that have been used in determining the width and location of this vein at different points?

A. There have. There are numerous waste raises placed in the hanging wall for the waste, is the reason they are put there.

1338 We used them to determine the width of the vein.

Q. Is there any place on this Exhibit 10 where you can get a strike of north 15 east?

A. North 15 east?

Q. Strike of the vein north 15 east. I will direct my question to the 400 foot level here on Plaintiff's Exhibit 14?

A. Yes; I got a course of approximately north 15 east about 100 feet—along the vein about 100 feet south of survey point 2100 as marked upon Plaintiff's Exhibit 14.

Q. And where is that with reference to the south side line of the Senator Stewart Fraction?

A. That is approximately 200 feet south of the south side line of the Senator Stewart Fraction.

Mr. GUNN: That is all.

Mr. GRAY:

Q. It is within the vein on its strike from the Senator Stewart Fraction side lines, isn't it?

A. Yes.

Mr. GRAY: That is all.

Witness excused.

1339 FRED T. GREENE, recalled on behalf of the plaintiff in rebuttal, testied as follows:

Direct examination.

By Mr. GUNN:

Q. Mr. Greene, I want to direct your attention to the drift immediately below raise No. 415 east and ask you whether or not in the face of that drift any drag ore is disclosed?

A. There is no drag ore disclosed in the face of that drift.

Q. Did you hear the testimony of Mr. Wiley with reference to the ore in the face of that drift being drag ore?

A. I did; and I disagree with Mr. Wiley.

Mr. GRAY: Wait a minute. That is improper, if your honor pleases. Mr. Green can give his opinion, but a comment on Mr. Wiley's testimony is not——

The COURT: He says he disagrees with Mr. Wiley. I think that is entirely proper.

Mr. GUNN:

Q. I direct your attention here, Mr. Greene, to defendants' exhibit "Y" and defendants' exhibit "X" and ask you whether
1340 or not those exhibits correctly represent the position of the vein in controversy in the ground and the position of the fault known as the Osborne fault and the relation of one to the other?

A. They do not, for the reason that it is impossible with straight ideal planes to reproduce the conditions of a curved plane meeting another slightly curved plane, and the celluloid as interposed on that model by Mr. Frank comes more nearly reproducing the meeting of the curved plane with another plane.

Q. What have you to say with reference to a taking of the general course of the vein as disclosed in the workings of the Stewart property for distances of several hundred feet and ignoring the course of the vein as it approaches the Osborne fault, showing the relation of the fault to the vein or the position of the vein in the ground beneath the Sen*toar* Stewart fraction claim?

Mr. GRAY: That, if your honor pleases, is not rebuttal. That was what their main case seemed to be made up of.

The COURT: I will overrule the objection.

A. The course of that vein directly applicable to the apex
1341 is that course which is under the Senator Stewart fraction, and the courses should be taken within the lines of the Senator Stewart Fraction claim in order to give the direct relation of the plane of the ore sheet with the plane of the fault.

Mr. GRAY: I move to strike that out. That is all a legal conclusion, the question whether or not your honor can consider the course of that vein outside the Senator Stewart fraction.

The COURT: The motion will be denied.
Mr. GUNN: That is all.

Cross-examination.

By Mr. GRAY:

Q. Mr. Greene, there is a round of unshot holes in this material which Mr. Wiley has designated drag and which you have chosen to term portions of the vein?
A. There is half a round, Mr. Gray.
Q. By whose direction was it that they were not shot—yourself?
A. I believe so.

Mr. GRAY: That will be all.

1342 Redirect examination.

By Mr. GUNN:

Q. And why were they never shot, Mr. Greene?
A. At that time we anticipated that we would be able to have Judge Woods see that face, and left the face there because it showed the exact relation of our vein to the Osborne fault and the exact contention that we have that the vein goes up to the Osborne fault and is terminated by the Osborne fault, and at any point from that termination in the line, east end line of the Senator Stewart Fraction, would be a downward course.

Mr. GUNN: That is all.

Witness excused.

1343 CYRUS F. TOLMAN, Jr., recalled on behalf of the plaintiff in rebuttal, testified as follows:

Direct examination.

By Mr. DINES:

Q. Professor Tolman, have you examined the actual exposure of the vein in the 400 level at the point testified to by Mr. Wiley and shown on the defendants' exhibit as blue fir tunnel level?

Mr. GRAY: I object; and call your honor's attention particularly with reference to this witness, that that is not rebuttal, because this witness in his examination of the mine confines it to a distance of five or ten feet from this fault, and he gave the courses there and testified to that area within a few feet of this so-called Osborne fault. He confined his testimony to that and declined to give testimony, or failed to at least, as to the great openings in the mine away from there. Now, I think as to Professor Tolman it certainly is not rebuttal. He has been over this ground himself before and confined himself to those little areas within a few feet of this——

1344 The COURT: I shall overrule the objection.
A. I have examined the face in drift No. 405 east shown on that model.
Mr. DINES: Please state to the court whether or not you found there any evidences of drag ore?

A. That face is a remarkable example or showing of how clean the ore can be cut without having any drag whatever.

Q. Please des-ribe to his honor just the form in which the ore lies at that place against the Osborne fault?

A. I was present when a photograph of that face was taken, and that shows the relations much better than I can describe.

Q. You refer to plaintiff's exhibit—which of these exhibits do you refer to? There are several of them?

A. Plaintiff's exhibit No. 17.

Q. Did you examine the sketch of Mr. Wiley that is identified here as defendants' exhibit "K", and the particular portion of the vein as it is exposed in the ground to which that sketch refers?

A. I examined that place and took notes on the dip of the pay streak or ore which is shown in this exhibit in red.

1345 Q. Please state to the court whether or not the dip of nineteen degrees, I think it is, that is given by Mr. Wiley at that point is the correct dip of the vein?

A. I took that dip twice with a clynometer, once when the photograph was taken and once in a previous examination, and both of my dips were very close to 35 degrees, so close that I concluded the dip 35 degrees as being the nearest number to express it in figures of five or ten.

Q. Have you examined the models, exhibits "X" and "Y" of defendants?

A. I have.

Q. Introduced by Mr. Boehmer?

A. Yes.

Q. Please state to the court whether or not you think those models correctly represent the intersection between the vein and the Osborne fault at that portion and whether or not their intersection as shown on those models is a correct representation of the intersections as it exists in the ground?

A. In defenda*tns*' model exhibit "Y" I found no such condition as represented at the intersection. This strike and dip ap-

1346 parently is taken from some long distance away from that intersection is projected in a theoretically perfect plane which does not show either the dip or the strike of the vein as it approaches the Osborne fault. In the other case, with this model exhibit "X", the celluloid gives a much better impression and is a closer representation of the actual conditions that occur along that intersection as I have seen them.

Q. Professore, did you hear the testimony of Mr. Searles and see his mathematical calculation?

A. I did.

Q. Is there any rule that you have developed by which you can consider the relation of dipping planes that intersect to the line of intersection and the line of intersection in relation to those so far as forming a top edge or bottom edge by the line of intersection?

A. I have formulated a definition which accurately described the condition as set forth in question.

Q. Will you please state what that is?

A. When a vein is intersected by a fault, if the vein and the fault

where they intersect dip into the same quadrant, the axis of intersection constitutes a top edge or apex so long as the course
1347 or direction of the said axis diverges in direction from the direction of the dip of the vein. It becomes a side edge when it coincides with the dip of the vein, and only becomes a bottom edge when it converges in direction with or towards the direction of the dip of the vein.

Q. Now, can you apply that statement that you have just made to the conditions as they are shown of the intersection as it actually exists or as nearly as you can get to its actual existence in the ground between the Stewart vein and the Osborne fault?

Mr. GRAY: I object as not rebuttal. Professor has attempted to go into the same matter on his former examination; he went there and gave measurements and gave angles.

The COURT: I think that he has been over that in his direct examination; that is my recollection; he related that the point of intersection was the apex of the vein.

Mr. DINES: Yes, sir, but at that time there was no development of the question of side edge, and on their case they have gone into the question, some of them bottom edge and some side edge and they put a mathematical proposition here by Mr. Searles to demonstrate it, and I wish——

1348 The COURT: And the professor has already countered on that, has he not?

Mr. DINES: No, sir, not on that calculation in its application.

The COURT: Well, I will hear it for the purpose of saving time. I want to get through with the evidence.

Mr. GRAY: I do not see how it saves any time if I have to cross examine him on all this over again that I went through once.

The COURT: I will overrule the objection.

1349 Q. Now, have you prepared any figures by which you could apply the rule which you have stated?

A. Yes, I have.

Q. All right, let us see what you have for an illustration?

(Witness produces two models.)

Mr. GRAY: I desire at this time to renew my objection. Your honor now immediately sees that it is not rebuttal. Originally it was claimed by the plaintiff in this case that the termination of the vein, the edge of the vein against the Osborne fault constituted an apex. It was contended, and considerable evidence—days of evidence was introduced about that in support thereof. It was contended by the defendant, not alone upon this hearing, so that counsel have had ample notice—it was also contended upon the injunction hearing here, that it was either a side or a bottom edge of that vein. Now, they have made their case, and it seems to me that in rebuttal to go back over these same things, to produce other models, perhaps presenting what Professor Tolman has attempted to testify to originally in a different manner, is not rebuttal. I do not think the case should be opened up in the way that he indicated he is going to attempt to open it up to your honor now by producing new models

which he has made. The very purpose of this is to carry
1350 out and to again go over the angles which he attempted to testify to on his previous examination, and your honor will well recall that he went on each of those levels and pretends to give on each of those levels the course of the vein. He also pretended to give the course of the Osborne fault and its dip, and to give to your honor certain angles which he apparently considered of some import or importance in the case at that time. Now, to come in another way and do it all over again it seems to me is not proper rebuttal. We will be going along here with repeated illustrations, first on one side and then on the other.

Mr. DINES: Your honor, I never heard before that what was presented in the form of ex parte affidavit and part of any cross examination, under your Idaho practice, at an injunction hearing, was included or even became any element in determining what is or is not rebuttal.

Mr. GRAY: I agree with you on that.

The COURT: Well, I will overrule the objection.

(Defendant excepted.)

Two models introduced by Mr. Tolman marked Plaintiff's Exhibits Nos. 20 and 21.

1351 WITNESS: I wish to state that the mathematical demonstration as given by Mr. Searles shows that the angles C, A, D is not the same as the angle C, B, D, that is his demonstration, provided the vein is cut at an angle so that it is projected in that way. In other words, the angle of the intersection of the vein as it goes against any fault and the line of its dip is not the same exactly as the angle formed between the course of that intersection and the course of the dip as seen on the plane; Therefore, it may be argued that we must confine ourselves to the plane of the section, and not to the map of the section, and therefore the proposition of my definition is attacked by that mathematics.

Mr. GRAY: I object and move to strike out the last suggestion. It is not attacked by that mathematics.

The COURT: Motion denied.

Mr. DINES: That is what we asked the professor to explain. We contend that the only application of the very simple equation that Mr. Searles put there and which he did not explain or apply, and I apprehend now that your honor did not understand how he applied it—I know I did not—he put an equation in which he had tangents and cosines, and the whole of that equation was——

Mr. GRAY: Well, the court declined to strike it out. There
1352 is nothing before the court.

The COURT: Yes, I have denied the motion.

A. According to my definition of the side of a vein, if you look at the vein as shown actually underground, or if you look at any plane shown underground, if you look in a direction at right angles to that plane it is evident that the direction of the dip of that plane must be parallel to the direction of the edge of that vein, if this be a side edge. That is self evident. Can you, however, not only take the plane as it stands up in the ground and take the map of that

plane as shown in a projection on a horizontal plane? This line BC is parallel to the line of the intersection of the vein itself, or a line AC as placed there. The line BC is therefore the map of the side edge, and the line shown by this small arrow shows the direction of the horizontal plane of the dip, as shown by the arrow in the model to the left of A. Therefore, if this is the side edge, you can apply this rule to the map as well as to the actual planes, that if it is a side edge, the direction of the dip must be parallel to the direction of the intersection at the point of intersection. Take a case where we have a fault painted or shown on this side of the model, intersecting the plane so that it cuts the plane along a line
1353 AD. If you confine your attention now to the plane of the vein, and not to the map of the vein, you see that the line of the direction of the dip verges in the ground as you go downward from the line of intersection as shown in this plane. According to his definition, then, that is a top edge. If you take the map of that same condition, you find that the map of the intersection or termination on this fault is shown by the line BD, because it is projected straight downward, and the map of the direction of the dip, the line AC is shown by the *shown by the* line CB. Now, it is true that the angle CAD is not the same as the angle CBD for the very simple reason that the line CB is shorter than the line AC, and a projection of the line AD is longer than the line DB; in other words, the two lines of the horizontal planes being shorter, the angle in here is thickened up. But, if you take these projections of the map on that level—, mark a map on that model, you see that the same condition holds true. This is the direction of the dip, this is the course as mapped of the apex or top edge of the vein, and in this case the direction of the dip diverges from the direction of the intersection as shown on the map.

Q. Now, will you kindly, on this same model, show the court the application of the rule stated by you where you have a
1354 bottom edge?

A. In the case of a bottom edge, the rule stated, that if you have a bottom edge you must have the direction of the dip converging with the direction of the line of intersection, it is evident in this case, if you have a bottom edge, that on this plane, the plane of the vein, if that condition exists, we will have a bottom edge in an exactly similar manner as this illustration is shown here if I project those lines downward, the line of the bottom edge straight downward and the line of the dip, they will also show the same relation, that going down in the direction of the dip, these lines converge.

Cross-examination.

By Mr. GRAY:

Q. Step up here, Professor. In other words, if you have a line, instead of the line BD, if the line was upon the base of this exhibit 21, as I draw it in blue from the point B to the point E, the line BE would be a bottom edge projected onto the plane?

A. Certainly, if you take the point of the apex and at that angle.

1355 Q. Well, instead of making it BE, I will mark it FE from the point there of the apex?

A. Certainly.

Q. Showing upon the plane of the vein the line would be approximately from the point—if the line was as I have drawn it in blue from the point F?

A. This point F would be identical with the point A.

Q. That is a bottom edge?

A. That is a bottom edge, provided, as this plane does, you take the dip of the vein as I have shown it there.

Q. Exactly. Now then, Professor, let us go over here and take a look at the Plaintiff's apex map. The Exhibit 3, which has the figure 7 painted on it, and called the apex. Does that figure 7 nearly agree, as you have it deliniated there, with the line upon the plane of that Exhibit 21 with the line EFG or with the line BDG.

Mr. DINES: Now, you are putting marks on that model; you are changing the lettering.

Mr. GRAY: I am putting letters on but I am not changing anything.

Mr. DINES: I object to his changing them.

1356 Mr. GRAY: The suggestion that I have changed them is made simply to confuse the record.

Mr. DINES: He has put the letter D on where there was a B. There are two D's there.

Mr. GRAY: Show me the other D. It is not shown there.

Mr. DINES: Right there.

Mr. GRAY: That is an F, and has been referred to as F.

The COURT: Yes, he has called it F.

Mr. DINES: Well, if that is an F, I would have to take a spy glass to distinguish it. If your honor thinks it is an F, that is all right.

The COURT: He has been calling it an F.

Q. What have you called it Professor?

A. Well, the evidence will state.

Q. Come up and look at it?

A. It looks like E to me. You had better make it F plainer.

Q. Now, having attempted to cover up the question——

Mr. DINES: No, I did not do that.

Q. I will repeat it. Does the figure 7 marked in red and deliniated as an apex upon Exhibit 3 agree more nearly with the line GFE or the line GFD?

1357 A. That comparison cannot possibly be made, because this line G and so called F represents the strike of the intersecting plane at that apex, while this line which would be shown from the point of this apex in this direction here is an entirely different thing, and is a function of the intersection of a portion of the apex with the surface of the ground, another portion with the Clancy fault, and again with a curved condition of the veins.

Q. I did not ask you anything about that; I am asking you simply whether or not a line GFE agrees more nearly with that figures 7 that has been painted there than it does with the line GFD?

Mr. DINES: I submit the witness has answered. You cannot compare them, because they are different things.

The COURT: He has answered, yes.

Mr. GRAY: He has declined to compare them.

Mr. DINES: Because they are different things.

Q. If the angle between the intersection on the strike of the vein and the projection of the line of intersection on a horizontal plane were an acute angle, would it not also be an acute angle in the plane of the vein?

A. Not necessarily so.

1358 Q. I want you to explain that?

A. The angle CBD is larger than the angle CAD?

Q. Yes.

A. If this line should be brought out so that this angle would go out in a direction at an angle of 45 degrees, that angle would no longer be an acute angle; the angle of the projection would lie along very closely that same line, and so it is not necessary that both angles, one would be acute and one obtuse.

Q. It is not necessary?

A. No, I mean that it is not necessary that both be acute.

Q. You say, as an instructor in the Leland Stanford, Jr. University during the years 1912 and 1913, that if the angle between the intersection *of* the strike of the vein and the projection of the line of intersection on the horizontal were an acute angle, that it would not also always remain an acute angle in the plane of the vein?

A. Why, certainly. I misunderstood your question.

Q. Then you go back and agree with me, do you not?

A. I do. I misunderstood.

Q. Your desire to correct your other testimony?

1359 A. I do. I thought you had reference to the opposite planes. If the angle—I can explain it.

Q. There is no need to explain.

Mr. DINES: Let him explain.

The COURT: Yes, let him explain.

A. If the angle CBD is an acute angle, it is evident, without any reference to mathematics, that this angle being less, must also be an acute angle.

Q. It must always be an acute angle?

A. Absolutely.

Q. Then Mr. Searles' demonstration here was correct, was it not?

A. Certainly. Its application was——

Q. Well, you will permit the court perhaps, to apply it. Professor, you have inspected this place where Mr. Wiley made a sketch and where Mr. Frank has taken a photograph?

A. Yes.

Q. And that is the little crosscut which is shown here at the point F on the Stewart tunnel level?

A. That is one of the places that we took a photograph, and that is the place that Mr. Wiley took his sketch.

1360 Q. That is the place that you have testified to?

A. Yes.

Q. Now, Professor, how far was it from the bottom of the drift on the right hand side of the crosscut or whatever you call it, to the bottom of the vein there; take the photograph; it has been colored by your assistance.

(Witness took Mr. Wiley's sketch.)

Q. No, never mind this. Take this and give it to me?

A. The vein is.

Q. Read my question. You have your notes. If you please answer from them?

Mr. DINES: I object to that.

Mr. GRAY: I want the Professor's original investigations.

Mr. DINES: I object to counsel for the defendant- taking the exhibit from the witness by force.

Q. From your notes how far is it from the bottom of the drift on the right-hand side, as shown in the sketch, to the bottom of the vein; now, turn to your notes where you have that?

A. My notes of that read that the ore streak is 30 inches at the rule, that that rule is oxidized below, and that the Osborne
1361 fault shows on the north side of the drift.

Q. Now, answer the question; how far is it from the bottom of the drift to the bottom of the vein as disclosed there?

A. That would be shown by the projection; it is within a few feet of it as near as I can tell, to the Osborne fault. The Osborne fault shows in the other side of the tunnel, or of the drift, on the north side of the drift.

Q. I am speaking of this little crosscut depth on the map?

A. I can scale it on the map.

Q. It is too small to scale, isn't it?

A. No, it is not.

Q. How far from the bottom of that cross cut is the bottom of the vein disclosed therein on the right hand side?

A. I should estimate it at about two feet.

Q. Now, take it on the left hand side, Professor?

A. The bottom of the vein—the vein goes up against the Osborne fault which is shown going along this level, and from the
1362 bottom of the drift I should say it would be about two feet there.

Q. Well, if it is two feet on both sides, then it must be level in between, isn't it?

A. Well, it is about two feet on the right hand side, and I imagine that it would be a little more on the left hand side, because the ore strikes somewhat different from the direction of the crosscut.

Q. Now, to make it a little more plain, let us take this sketch up to his honor, where you can point out these things. On Defendants' Exhibit K from the point A to the point B how far is it?

A. Oh, no, that is not the bottom of the vein.

Q. Well, answer my question?

A. I will answer that question and make out the point, that this is simply the ore streak, and this is not the bottom of the vein. The fault would come back from here, from that distance.

Q. How far, from your investigation up there, Professor, was there between those points?

A. I did not measure that distance.

Q. How far was it from the point at the bottom of the drift where I have marked the letter C to the point D, the bottom of the
1363 ore?

A. I did not measure that. That point of the drift is covered up in the bottom; there is a great deal of broken material——

Q. You knew where the bottom of the drift was?

A. Yes.

Q. How far was it?

A. I didn't measure that point; I took the dip of that ore streak as I testified.

Q. All right. How high was the opening there from the foot to the bottom of the cap?

A. About five feet, the average height.

Q. For how much of that distance in lateral extent was that ore streak exposed there?

A. About the width of that—the bottom exposure or the——

Q. Along in that section?

A. In that drift, that little crosscut, as you look forward into this little crosscut as shown from a point in the level to a point to the right of that crosscut, it would be about seven feet here, and allowing for the curve a couple of feet more, it would be nine feet.

Q. Now, the ore was approximately, however, as shown
1364 in Mr. Wiley's sketch, was it, Professor?

A. The ore as shown in Mr. Wiley's sketch is probably correct, but what I objected to is the dip of that ore. The only thing I could observe there as to the dip was 35 degrees.

Q. Now you took the dip of that ore streak as disclosed in there?

A. 35 degrees, yes, sir.

Q. Tell the court how you got a dip of 35 degrees upon that ore streak that you say is approximately sketched correctly on Mr. Wiley's Exhibit K, where it is exposed for a distance of eight or nine feet in length and for a distance of only five feet in height, and show where you took that course upon the sketch; designate it on the sketch how you got that amount of an angle?

A. That angle has nothing to do with the dip, because it was not drawn at right angles.

Q. Well, you take the ore streak as you find it in there, and you said you had the dip, and I want to know how you took it?

A. I have the dip of the ore streak as 35 degrees in a southerly direction. This face, as you would look across it, would be approxi-
mately parallel or approximately at right angles with the
1365 little working. That little working does not represent the dip of the ore, and therefore the angle as shown here in the sketch is less than the true dip, and therefore that sketch as shown does not show the direction of the dip.

Q. Then you, in taking this course which you have just testified to, took it across the little drift, did you?

A. I took that course.

Q. Through the opening?

A. I took that course as shown by the plunge of that ore going down there, and it is not at right angles to the direction of this dip.

Q. Tell the court whether or not you took it across the drift?

A. No, I went into the face, where it is shown.

1366 Q. And where the ore ceases exactly as shown by Mr. Wiley's sketch?

A. That would be a section of it.

Q. Across that section where do you get this dip of thirty-five?

A. This section is not the dip of the vein. In taking the dip of the vein we take the steepest angle downward.

Q. Do you say to his honor that if you have a section such as that you cannot indicate to him upon it where you can get your dip of thirty-five degrees?

A. Certainly not; I cannot indicate on this section because it is not in the direction of the dip.

Q. And yet you said to his honor that in this little crosscut or drift where the vein is disclosed going up against the Osborne fault that you took its dip there and that it was thirty-five degrees?

A. Certainly, but it is not in the line of this section.

Q. As a matter of fact, you could not get a dip of thirty-five degrees upon that section, could you?

A. On that section certainly not.

1367 Q. What is the course of the vein at that point, Professor?

A. That is simply an ore streak. It does not give the course of the vein.

Q. You took a good many through ore streaks, the course of the vein along this Osborne fault; didn't you take this one?

A. I took this one, yes, sir.

Q. Give that to us.

Mr. DINES: What is the question, the course of the ore streak or the course of the vein?

Mr. GRAY: Yes, whatever he took the dip of; I want to get the course of.

A. In this little crosscut as shown in this face the direction of dip makes the direction——

Q. Oh, I did not ask you the direction of the dip; I asked you the course of the vein?

A. Well, the strike of the vein—not the strike of the vein but the strike of that ore streak is north sixty degrees east.

Q. Is not the crosscut run square with that, and therefore shows the true dip, and didn't you disregard that in

1368 giving your testimony, in criticising Mr. Wiley's section? Take the course of that little crosscut and see if that is not true. Here is a protractor, Professor.

A. The course of that crosscut as shown by the whole length is east 25 degrees to the north—the direction of that is north 20 degrees west.

Q. That would be south 70 east?

A. Yes, south 70.
Q. Within four degrees of what you say——
A. No, I beg your pardon; it would be ten degrees off there.
Q. You said it was 66 didn't you?
A. Sixty.
Q. Well, I would like to refer to that testimony again. Will you please read it. I understood you to say sixty-six.
A. Sixty degrees.
Q. Where are your notes on that, Porfessor, and we will see if they do not show 66. Here they are right there. Is not that south sixty-six east?
A. No, sir.
Q. What is it—sixty-five?
1369 A. Yes, sir, sixty-five.
Q. Well, then, sixty-five?
A. Yes, sir.
Q. Professor, that little crosscut is how long?
A. I will scale it. As nearly as I can scale it about eight feet.
Q. What difference, Professor, would the difference of that ten degrees make in that eight feet?
A. That is not all of the question——
Q. Just answer that, if you please?
A. The face is not a true face in that it is curved, and if that was taken in a theoretical perpendicular line to that line of strike it would not make very many degrees, probably not more than five degrees, as a guess, difference.
Q. How much difference would it make through out that length in inches or tenths of inches, approximately?

Mr. GUNN: Can you not allow the examination of Mr. Winchell to go on?
Mr. GRAY: Yes, sir, I am perfectly willing that he should figure that out.
Witness temporarily excused.

1370 HORACE V. WINCHELL, recalled on behalf of the plaintiffs in rebuttal, testified as follows:

Direct examination.

By Mr. DINES:

Q. Mr. Winchell, have you examined the face of the fir tunnel level at the point where it comes in immediate contact with the Osborne fault and the appearance of the vein and the fault at that point?
A. Yes, sir, I have.
Q. Please state to his honor whether or not there are any evidences of drag ore at that point?
A. I saw none; the ore which is developed there is in the vein and continuously within the vein for some distance to the westward and lies upon the hanging wall of the Osborne fault inclined from its upper edge, that is, the upper edge of the ore inclined downward

to the southwest. The fault claim is seen in the lower northeastern corner of the face of the drift and there is no drag material nor fault material above it.

Q. Are you familiar with a vein known as the No. 2 vein, I
1371 think it has been called to attention to once or twice in the testimony?

Mr. GRAY: Objected to as not rebuttal. Mr. Winchell is the only one that has testified to it.

Mr. DINES: It is simply preliminary. I think I can show its application; it is not developed yet.

The COURT: I will allow the introduction.

A. I am.

Mr. DINES:

Q. Did you hear the testimony of Mr. Wiley in reference to the attempted connection of the Stewart vein where he placed a pointer through what is called the vent here in attempting to connect the Stewart vein with the vein that is disclosed in the upper Stewart tunnel?

A. I heard his testimony.

Q. What is it that separates the portion of the vein that he referred to in his testimony to the northwest from the Stewart vein?

Mr. GRAY: I object. Mr. Winchell went into that, and testified as to the Clancy fault, said he did not know what the throw was on that.

Mr. DINES: I understand. I can show the appli-ation of
1372 this question.

Mr. GRAY: This is really under the theory of rebuttal attempting to try the case over here and impress it upon your honor.

Mr. DINES: If your honor wishes me to state it, I can state it to you.

The COURT: I will overrule the objection.

Mr. DINES:

Q. What is it?

A. The Clancy fault.

Q. Now, if the portion or mass of the country including the portion of the vein shown in the upper Stewart tunnel and separated from the vein shown in the Stewart workings by the Clancy fault, is adjusted and correlated, what effect would it have on No. 2 vein with reference to apex within the side lines of the Senator Stewart Fraction?

Mr. GRAY: I do not see that that is rebuttal or has anything to do with the case. Mr. Winchell and Mr. Wiley have disagreed——

Mr. DINES: I am taking Mr. Wiley's assumption now and showing what it leads to; it is not any new theory of ours.

1373 The COURT: I will overrule the objection.

A. If the segment of the earth above the Clancy fault which was referred to by Mr. Wiley as containing in the Samuels ore body the uppermost segment of the Stewart vein, were replaced so that it

occupied its original position before the movement along the Clancy fault had taken place, we should at the same time have the No. 2 ore body brought forward very close to a physical connection with the vein now disclosed in the apex drift and we should have an east and west vein for a distance of several hundred feet upon the surface or near it in that portion of the Senator Stewart Fraction claim.

Q. Would there be any more difficulty in correlating No. 2 vein with the apex as you have described than in correlating the workings in the upper Stewart tunnel with the workings in the Stewart mine on the Stewart vein?

A. There would be less difficulty.

Q. Explain to his honor why less?

A. Because of the relative positions in the ground; the No. 2 ore as seen by me in 1906 strikes easterly and westerly and was then disclosed on the 35 foot level and upon the old lower
1374 Stewart tunnel level extending in a direction which if continued without interruption will bring it to a connection with the apex as shown in the apex drift. The distance and the position are such that we have a relation upon strike rather than a relation upon dip such as that which now obtains between the Samuels ore body and the uppermost portion of the stopes in the Stewart vein.

Q. Then, if that correlation is made what would be your total length of east and west, not considering the Clancy fault at all, if you go through it in one case, going through it in the other, through your east and west line?

A. Perhaps five hundred feet.

Q. What body of ore is this in red above the old lower Stewart tunnel in defendants' model?

A. That is a floor of a stope upon the No. 2 vein or ore body to which I referred which has an easterly and westerly strike.

Q. And what is the body colored in yellow on defendants' exhibit 1—plaintiffs' exhibit 1 and marked 35 level?

A. That represents the same working.

Q. I will ask you, Mr. Winchell, if you have had an
1375 opportunity to examine the model introduced by the defendants, I believe, as defendants' exhibit "L"?

A. I have examined it.

Q. Will you please point out in that model any inaccuracies or deficiencies either in its design or in the model itself or in any portions of the model that will enable you to discuss to the court the question of its bearing upon the issues in this case, in your own way and without further questions about it?

A. This is a very good model as far as it goes and as far as the vein in the ground could be disclosed with the information in the possession of the defendants and the type of model used. It has a number of inaccuracies and some which perhaps I should criticize as not correctly representing conditions now disclosed in the ground, but the first and fundamental and most apparent defect in this model is the absence of stopes. It is made upon horizontal planes situated at a considerable distance from each other in the ground and manifestly cannot clearly and accurately portray the dip of ore

bodies, of faults, of structural features in the ground between the points of intersection of those horizontal plan-s placed so far
1376 apart. The advantage of stopes is clearly seen where the Frank and the Gray stopes are introduced as shown upon the model. There we get at once a picture of the position of the vein. Now, if the other stopes were placed between the levels as illustrated upon one plan, upon plaintiffs' exhibit 2, we would have a picture of them in three dimensions upon defendants' exhibit "L", and we would at once and readily see the relation in strike and dip which is not disclosed upon this model as it stands. A cross section model such as plaintiff's exhibit 15-A and constituted of vertical sections parallel to each other, no matter what the angle of those sections through the ground, placed sufficiently close together will give as nearly correct a view on looking through as possible to represent in the absence of a solid, concrete or wooden built-up model. The glass section model gives you this picture of the interior condition just as though the ground were transparent, and you were looking through it, and all of the conditions disclosed upon the sectional model 15-A can be seen, but not so readily upon the same portion of territory which it covers upon this model so far as the model represents those conditions. We can get the same
1377 idea of a dip downward toward the Osborne fault by taking a view upon defendants' exhibit "L" from the ore body in the top of the Samuels raise toward the Osborne fault that you can get in either model. It makes no difference. There is no misrepresentation or distortion nor improbability, nor attempt to deceive, it is just as clear and fair and correct a representation of the structural relations between the vein and the ore in it and the Osborne fault as could be prepared.

I should like to call attention to the fact that the apex drift in its westerly portion is shown colored blue with one or two almost invisible red dots upon defendants' exhibit "L"; that that drift discloses a very excellent quality of ore—galena—that it is admitted generally to be upon the vein, that no one going there and seeing it could doubt that it is upon the vein, and yet it is colored blue upon this model. There are other places, many of them, where such details as that perhaps tending upon the whole to convey a minimized idea as to the thickness of the vein or its real position as shown upon defendants' exhibit "L", but the principal defect in this model is the fact that from it without the stopes it is impossible to
1378 gain a satisfactory and correct idea as to the dip of the vein in its relation to the Osborne fault.

Q. In the model what can you say about the way the vein is carried up along the intersection as shown in this model?

A. Almost invariably there is an error at the point of intersection of the vein by the Osborne fault, due, however, largely to the fact that this celluloid sheet is not placed where it ought to be. For instance, upon the 300 level the celluloid sheet which is naturally taken to represent the plane of intersection of the vein by the fault is at a distance of some twenty feet away from that intersection. It should be south and west of the dip instead of north and east of it. The same is true upon the 200 level. Here the raise 218 east has

been described by witnesses for both plaintiff and defendant as disclosing along it the Osborne fault, but that raise is entirely upon this model in the hanging wall side of the Osborne fault at a distance of twenty feet from the actual plane of intersection. Consequently this red paint in its relation to the hanging wall plane of the
1379 Osborne fault is not correctly represented upon the model and the model itself is not entirely consistent on that point as to the workings in wood and the celluloid sheet. Moreover, the warping of the celluloid sheet which was said to represent as nearly as possible the correct position and changes in strike and dip of this hanging wall would be very different if attached to the other side of these drifts where it should be attached; therefore, in that respect the model is manifestly inaccurate. I might add, the model does not and cannot show the upward extension of the ore upon each level and above each level at the intersection of the vein by the Osborne fault. It only shows what is shown for the height, it only purports to show what is disclosed by the actual height of the working upon the levels and not between.

Q. Have you seen the models, exhibits "X" and "Y" prepared by Mr. Boehmer and introduced in connection with his testimony?

A. I have seen them.

Q. Please state to the court whether or not in your opinion the intersection between the vein and the Osborne fault as shown in these models gives a correct representation of the inter-
1380 section as it actually is in the ground from the developments that have been actually made there?

A. No; those models do not represent the actual conditions. I take it that those models are simply diagram-tic. They do not represent actual conditions any more than a dollar-sign represents the money in the bank. They represent theoretically and ideally intersections at certain definite angles and the angles given there differ very materially from the angles in the ground and the angles shown upon defendants' exhibit "L".

Q. Take for instance the dip of the Osborne fault of 58 degrees and 34 minutes as shown on those models?

A. It takes but a moment to compare the dip of 58 degrees and 34 minutes with the dip actually shown upon the edge of this celluloid sheet at various points ranging from sixty to eighty degrees.

Q. By the celluloid sheet you last referred to was the celluloid sheet on the defendants' model——

A. Exhibit "L".

Q. "L". Did you see the cross section of Mr. Searles, the cross section that he prepared?

A. Yes, sir, I saw it.

1381 Q. One moment, before we begin I wish to ask one other question about the other. Defendants said by one of the witnesses here, I think by Mr. Boehmer, in reference to the plaintiffs' model A-15 that the only way you could show the relations between that vein and the fault, or the best way you could show it, would be by horizontal sections, a model formed in that way. What do you say as to that statement?

A. Unless such sections are transparent and placed in their correct position in relation to each other and taken very closely together, they cannot represent so clearly relations of dip as vertical sections.

Q. Now, I will ask you, please, to discuss the cross section that is identified as defendants' exhibit "R" introduced by Mr. Searles and make any statements concerning that that you desire to make?

A. The first criticism which I should make of the section identified as exhibit "R" and the sections introduced by other witnesses for the defendants is that upon these sections the thickness of the vein appears to be from six to eighteen feet, and we know from my disclosures in the ground, from many stopes and crosscuts
1382 that the vein has a thickness frequently of more than thirty feet. In that respect, therefore, these sections do not represent the vein properly and accurately. In the next case, the only purport of this section seems to me to be to represent a downward course from some point in the vein to the major fault as it is called on this section, or what we call the Osborne fault. The section as taken along the western end line of the Ontario claim. It is only necessary to imagine that we take a series of sections upon axes, rotating upon an axis around the northwestern corner of the Ontario to show that we should very soon arrive at a section starting at the uppermost portion of the stopes above the old lower Stewart tunnel level, from which necessarily the vein would descend to a point where we know it upon the 400 level some 350 feet deeper in the ground, and such a section illustrates the fact that there might be any number of sections and if the various little faults in the ground, like the No. 11 fault, were observed and placed in their proper position we should have some of these upper edges, or somewhere in the section, the vein against one of these minor faults. It is not taken parallel to the east end line of the Senator Stewart Fraction claim.

1383 Q. Now, the cross section of Mr. Wiley's; is there anything further you wish to say as to that? You have spoken of it in a general way?

A. The principal objection I have to it is that it does not represent the vein in its thickness; it represents possibly at some points the thickness of the ore as stoped.

Q. Please state to the court whether or not an assembly of cross sections taken in planes such as defendants' exhibit "R" would represent what is shown here if taken parallel planes—vertical planes?

A. It would not. An assemblage of such cross sections taken at any angle whatever through this ground, if placed parallel to each other or in their relative position to each other and transparent, would show the true conditions in the ground and would not disclose singly, as shown singly upon this exhibit "R" the downward inclination to the east, or toward the Osborne fault.

Q. Would that be true in reference to the cross section that was introduced by Mr. Wiley, the one that was introduced with his testimony?

Mr. GRAY: It is a cross section through the line 5-5.

1384 Mr. DINES:

Q. Here it is. I show you a cross section introduced in connection with Mr. Wiley's testimony and identified by him and marked defendants' exhibit "J." Will you please tell me what an assembly of cross sections like that would show; I mean made on vertical planes parallel to the plane on which this section is made?

A. Well, in what respect?

Q. Well, would it show the same condition that is shown here if you take a series of them and took them all through this property?

A. There is a large amount of projection upon this section and it does not correspond with my conception as to the dip of the vein at various points, and the displacement along the Clancy fault. I have no reason to think from anything that I have seen in the ground that the vein *belong* the upper Stewart tunnel level has any such dip. My observations show it to have a dip of seventy degrees and that would make the apparent displacement upon this line of sections much greater than shown upon the section exhibit "J" which appears here to be about sixty feet. If the vein with a dip of seventy degrees as shown ten or fifteen feet below the upper
1385 Stewart tunnel level extends downward, we should have three times the displacement which appears upon this plane or section—upon this section as introduced.

Mr. DINES: That is all.

Cross-examination.

By Mr. GRAY:

Q. A vein going down at that angle, it would have less displacement than the displacement between the Gray and the Frank ore bodies?

A. There is no displacement between the Gray and the Frank ore bodies if you follow them up upon their dip. They come directly together in the stopes.

Q. Considering them in the Ontario ground and on the fir tunnel level.

A. That is true.

Q. The displacement would be greater than the displacement of that vein on the Clancy fault, even producing it down at seventy degrees.

A. It would be just the same.

Mr. GRAY: That is all.

Witness excused.

1386 CYRUS F. TOLMAN, recalled on behalf of the plaintiffs in rebuttal, testified as follows:

Cross-examination (resumed).

By Mr. GRAY:

Q. Have you figured that out, Professor?
A. The difference of a section of sixty inches, scaled in this place here, would be practically seven inches.
Q. Then you would only have to take a point seven inches off of Mr. Wiley's section in order to get what you would determine to be the true dip, wouldn't you, in there?
A. That would be true, yes, sir.

Mr. GRAY: That will be all, Professor.

Witness excused.

Mr. DINES: I think all of our exhibits are introduced your honor.
The COURT: They will be all considered introduced.
Mr. GRAY: On both sides?
The COURT: Yes, sir, on both sides.

1387 Whereupon a recess was taken until 2:00 o'clock P. M. of this day, Thursday, January 16, 1912.

THURSDAY, *January* 16, 1912—2:00 o'clock p. m.

Trial resumed.

Mr. DINES: May it please the court, by the courtesy of the opposing counsel, Professor Tolman desires to make a correction which we would like to make; it seems that he misread a certain note that he took hurriedly in the course of the photograph and did not turn to his geological notes and he wishes to make a correction, your honor.
The COURT: Very well.

CYRUS F. TOLMAN, recalled for further examination, testified as follows:

Direct examination.

By Mr. DINES:

Q. In giving the course of the vein at the point concerning which you were last interrogated, Professor Tolman, do you desire
1388 to make some correction in the reading of the course of the vein?
A. I do.
Q. Please explain to the court when the note from which you now read was made and in what connection?
A. The note which I now read is the course on my geological map which I checked up and differs from the course which I took from the photograph which I did not check up. The correct dip is practically due south, so that the direction of the ore streak would be east and west instead of as I gave it.

Cross-examination.

By Mr. GRAY:

Q. Turn to your other notes, Professor?
A. Yes, sir, they are incorrect.
Q. They were made by you from your observations?
A. They were, but they were not platted.
Mr. DINES: Not correct.
Mr. GRAY: But those were the observations that you made?
A. I made both observations.
1389 Q. That is the course of the vein, south 65 west?
A. No, I beg your pardon; I took two directions; I took a direction on the picture which was shown as south 65 west and I took a strike of the vein as north 60 west.

Mr. DINES:

Q. And the ones that you have last read were not the ones which you had platted and corrected on your geological notes?
A. No.

Mr. GRAY:

Q. But they were the ones which you used?
A. Yes, they were the ones which I used.

Witness excused.

Thereupon the following evidence was introduced in sur-rebuttal:

1390 WALTER H. WILEY, recalled on behalf of the defendant, in sur-rebuttal, testified as follows:

Direct examination.

By Mr. GRAY:

Q. I hand you defendants' exhibit "Z," a sample of ore. Did you take that sample?

Mr. DINES: We object to this as not sur-rebuttal. We did not introduce this sample.
The COURT: The objection will be overruled. I suppose it is in connection with the——
Mr. DINES: It is the sample as I understand shown Mr. Frank?
Mr. GRAY: Yes, sir.
Mr. DINES: My proposition is that they cannot build up by showing a sample to Mr. Frank, they cannot build up sur-rebuttal, unless it is a part of Mr. Frank's testimony in rebuttal.
The COURT: I will strike it out unless it is. I cannot tell what it is until I hear it.
1391 Mr. DINES: Mr. Frank did not identify it. It certainly cannot contradict anything that he said, because he did not identify it. Your honor will remember that he said he could not take a piece of ore and identify it unless he knew where it was taken from, so it cannot be to contradict him, and unless it is to contradict him, it would not be sur-rebuttal.

The COURT: If it does not contradict him, I will strike it out; I cannot tell until I hear the evidence. You may proceed, Mr. Wiley.

A. I took this sample from the fir tunnel level, from the easterly drift of the short drifts driven upon the fault on the exact breast of that drift.

Mr. GRAY:

Q. Mr. Wiley, is that in your judgment drag?

Mr. DINES: We object to that. That has been gone over in part of their case, and they cannot in rebuttal simply pile up on that more matter. He has testified to that particular place, and the rebuttal was rebuttal to the matter that he brought up, and now he comes in again and asks him the same question that was asked him on his direct examination as part of the defendants' case.

Mr. GRAY: Now, if your honor pleases, originally they
1392 produced Mr. Frank and a number of other witnesses and they claimed that that was vein there. Mr. Wiley gave then in defense his opinion that there was in this place nothing but drag. Mr. Frank has come back again and then, in a very liberal interpretation of rebuttal, of what was rebuttal, your honor permitted him again to say that it was not drag and that it was vein, and now after the sample was shown Mr. Frank I desire to have Mr. Wiley explain to your honor what that sample indicates to him, that it is drag. He has identified the place from which it came. Now, they have chosen to go back into this question, which I thought was a part of their original case, and we should be permitted to introduce this sample and show to your honor the reasons why Mr. Wiley feels that he is justified in stating it is drag.

Mr. DINES: In support of the objection I made, your honor, I call your attention to the fact that Mr. Wiley designated it for the first time it had designated as drag in his testimony as part of the defendants' case. The rebuttal was admitted because we had a right to rebut Mr. Wiley's statement that it was drag, and now,
on sur-rebuttal, he comes in and wishes to reiterate that it is
1393 drag, and I submit that that is not sur-rebuttal, and we object to the question and the answer on that ground.

The COURT: I shall sustain the objection.

Mr. GRAY:

Q. There is one thing that I desire to make entirely plain to his honor. The sketch, Mr. Wiley, which you made and which has been identified as defendants' exhibit "K" and concerning which Professor Tolman has given some testimony; will you state to the court whether or not that was taken along the dip of the vein as disclosed in that working?

Mr. DINES: I object to that as not sur-rebuttal.

Mr. GRAY: If your honor pleases, Mr. Wiley testified that he made it at this particular place. Professor Tolman, under their theory of what is rebuttal, came in and has testified that that is not along the dip, although the observations which he made in the

ground and which he read to your honor do show that it was along the true dip but he has attempted to plat them upon the map and says from plotting it it is not along the true dip, or it is within approximately one degree according to the observations which he made in the ground, that is, when he gave the course of south
1394 sixty-five or sixty-six west, some place along there, or sixty; I want Mr. Wiley to clear up that one matter as to whether he took it along the true course.

The COURT: I will overrule the objection.

Mr. GRAY: Just explain that in your own way.

A. The sketch is made along the side of the crosscut. The crosscut is run at right angles to the drift which follows the strike of the vein, so that that portion of the vein shown in this sketch does correctly represent the true dip of the vein as shown in the side of this little crosscut.

Q. That portion of the vein which is shown in there—upon that portion of the vein which is shown in there the ore as you have marked it there—could a course showing a dip of thirty-five degrees be secured, Mr. Wiley, or taken? Have you a protractor? Just indicate to the court whether or not you could take a course of thirty-five degrees there?

Mr. DINES: I submit Mr. Wiley testified to the dip of that place in his other examination, and he is asked to testify to the dip now.

Mr. GRAY: I am simply determining whether or
1395 & 1396 not it would be possible to get such a dip as Professor Tolman has testified he found there.

The COURT: I shall overrule the objection.

A. The bottom of my protractor is now set on a dip of thirty-five degrees. The length of the crosscut is about eight feet; its height a little over five. If a body of ore thirty inches or more in thickness or thirty inches in thickness were disclosed near the face of this crosscut and at a space of a foot above the floor of this crosscut and it had a dip of thirty-five degrees on the under side, the under side of this body of ore would not reach the drift at all; in other words, if it were as steep as that it would be impossible to see both ends of this vein if it had a dip of thirty-five degrees.

Mr. GRAY: That is all.

Witness excused.

Mr. GRAY: We rest.

Testimony closed.

1397 It is hereby stipulated and agreed by and between the respective parties to this action, acting by and through their respective attorneys of record herein, that the foregoing transcript containing in all 1396 pages contains a full, true and correct copy and transcript of the original files and records in said action as the same now remain on file and of record in the office of the Clerk of

the District Court of the First Judicial District of the State of Idaho, in and for the County of Shoshone, and we do further certify that the same contains every matter and thing whatsoever (except exhibits which are separately certified by the Clerk of said Court) used or considered by the District Court or the Judge thereof upon the hearing had in said cause upon the motion of the plaintiff, Stewart Mining Company, for a new trial of said action including the complaint in said action, the answer and cross-complaint of the defendants thereto, the answer to the cross-complaint, the supplemental complaint, the findings of fact and conclusions of law, the judgment, notice of intention to move for a new trial, order denying motion for a new trial, certificate of papers used on motion for a new trial, notice of appeal and acceptance of service thereof, undertaking on appeal, order re exhibits, bill of exceptions relating to refusal
1398 of the Court to make the findings of fact and conclusions of law proposed by the plaintiff and appellant, Stewart Mining Company, also the testimony of the following witnesses adduced by either of the parties, to-wit: M. W. Bacon, William Beaudry, Max Boehmer, Fred W. Calloway, William Clancy, Stanly A. Easton, Alfred Frank, Fred T. Greene, William H. Herrick, Oscar H. Hershey, George A. Kennedy, Andrew C. Lawson, Clayton Miller, J. M. Porter, Fred Searles, Jr., Walter G. Swart, Cyrus F. Tolman, Jr., Walter H. Wiley, Sidney L. Shontz and Horace V. Winchell, which testimony constitutes all of the testimony adduced at the said trial by either party and constitutes and is a full, true and correct transcript thereof.

It is further stipulated and agreed that the foregoing transcript shall have the force and effect of a bill of exceptions duly settled and allowed, and shall be deemed adequate to present for review any ruling appearing therein, all objections to the form of said transcript being hereby expressly waived.

TYSON L. DINES, *Denver, Col.;*
GUNN, RASH & HALL,
Helena, Mont.;
CULLEN, LEE & HINDMAN,
Spokane, Wash.;
FEATHERSTONE & FOX,
Wallace, Ida.,
Attorneys for Plaintiff.
MYRON A. FOLSOM,
JOHN P. GRAY.
J. F. GYDE,
Attorneys for Defendants.

1399 Upon the reading of the foregoing stipulation and sufficient cause appearing therefor, I, William W. Woods, Judge of the District Court of the First Judicial District of the State of Idaho, in and for the County of Shoshone, hereby certify that the foregoing transcript contains a full, true and correct copy and transcript of the original files and records in said action as the same now remain on

file and of record in the office of the Clerk of said Court, and do further certify that the same contains every matter and thing whatsoever (except exhibits which are separately certified) used or considered by this Court upon the hearing had in said cause upon the motion of the plaintiff for a new trial herein, and it is further ordered that the said transcript have the full force and effect of a bill of exceptions duly settled and allowed and shall be deemed adequate to present for review any ruling appearing therein; together also with the question of the insufficiency of the evidence to justify or sustain the findings of fact and conclusions of law and judgment thereon.

Dated at Wallace, Idaho, this 21st day of February, A. D. 1913.

WILLIAM W. WOODS,
District Judge.

1400 STATE OF IDAHO,
County of Shoshone, ss:

I, John P. Sheehy, Clerk of the District Court of the First Judicial District of the State of Idaho, in and for the County of Shoshone, do hereby certify that pages 1 to 66 inclusive, of the foregoing Transcript include the papers prepared by me by virtue of a Præcipe filed therefor by appellant within five days after the filing of the Notice of Appeal; that pages 67 to 1399 inclusive, is the Transcript of Evidence and Reporters' Transcript, including stipulation and settlement thereof by the District Judge who tried the cause; that the foregoing record is compiled and bound under my direction as a true and correct transcript of the proceedings therein contained.

In witness whereof, I have hereunto set my hand and affixed the seal of said Court this 21st day of February, A. D. 1913.

[Seal District Court, First Judicial District, Shoshone County, State of Idaho.]

JOHN P. SHEEHY,
Clerk District Court.

1401 In the Supreme Court of the State of Idaho.

STEWART MINING COMPANY, Appellant,
vs.
ONTARIO MINING COMPANY, STANLY A. EASTON, and MYRON A. FOLSOM, Respondents.

Stipulation.

It is stipulated that the foregoing transcript, consisting of four (4) volumes and containing 1400 pages, is a full, true and complete transcript of the record filed in perfecting the appeal to the above entitled court in said cause;

And it is further stipulated that the clerk of the Supreme Court may so regard the transcript in certifying the same in obedience to

any writ of error which may be issued to have the judgment in said cause reviewed by the United States Supreme Court.

Dated this 22nd day of May, A. D. 1913.

FEATHERSTONE & FOX,
CULLEN, LEE & HINDMAN,
GUNN, RASCH & HALL,
Attorneys for Appellant.
MYRON A. FOLSOM,
JOHN P. GRAY AND
JAMES E. GYDE,
Attorneys for Respondents.

1402 In the Supreme Court of the State of Idaho.

STEWART MINING COMPANY, a Corporation, Appellant,
vs.
ONTARIO MINING COMPANY, a Corporation; STANLY A. EASTON and MYRON A. FOLSOM, Respondents.

Stipulation That Error in Transcript May Be Corrected.

An error appearing in the Transcript on Appeal in this cause, in that the said transcript has the word "downward" at the end of the first line in Paragraph 13, of the Transcript of Findings of Fact, Folio 75, Page 30, of said Transcript, instead of "onward" as is found in the original Findings of Fact,

It is therefore stipulated, that the word "downward" found at the end of the first line in paragraph 13, Folio 75, Page 30 of said Transcript shall upon the hearing on said appeal be read "onward," and that the Clerk of the Supreme Court may change the said transcript so that the said last word in first line of paragraph 13, Folio 75, Page 30 of the said Transcript shall be "onward" as it is in the original findings of fact.

GUNN, RASH & HALL,
CULLEN, LEE & HINDMAN AND
FEATHERSTONE & FOX,
Attorneys for Appellant.
MYRON A. FOLSOM,
JOHN P. GRAY,
J. E. GYDE,
Attorneys for Respondents.

Endorsed: Filed Mar. 25, 1913. I. W. Hart, clerk.

1403 In the District Court of the First Judicial District of the State of Idaho in and for the County of Shoshone.

STEWART MINING COMPANY, a Corporation, Plaintiff,
vs.
ONTARIO MINING COMPANY, a Corporation; STANLY A. EASTON and MYRON A. FOLSOM, Defendants.

Affidavit.

I, John P. Sheehy, Clerk of the District Court of the First Judicial District of the State of Idaho, in and for the County of Shoshone, do hereby certify that the following exhibits, and none others, were introduced in evidence in the above entitled Court and action by the plaintiff, viz:

No.	Description.
1.	Plan Map
2.	Stope Map of Stewart Mine
3.	Surface Map of Stewart Mine
4.	Section IV
5.	Section I looking West
6.	Section II
7.	Section III
8.	Section VI
9.	Section V
10.	Lower Stewart Tunnel Map
11.	Plan Map, 100 Level
12.	Plan Map, 200 Level
13.	Plan Map, 300 Level
14.	Plan Map, 400 Level
15 A.	Glass Model
15 B.	Tracing Model Base
16.	Photograph
17.	Photograph
18.	Photograph
19.	Photograph
20.	Block and Base-Model of Mr. Tolman's
21.	Block and Base-Model of Mr. Tolman's

and that the following exhibits, and none others, were introduced in evidence in the above entitled Court and action by the defendants, viz:

1404

A. Copy of Clancy's Map
B. Plan Map of Ontario Claim
C. Sketch by Lawson
D. Cross Section 2-2′
E. Cross Section 3-3′
F. Cross Section 4-4′

No.	Description.
G.	Diagram
H.	Diagram
J.	Cross Section 5-5′
K.	Cross Section Sketch by Wiley
L.	Model of Workings
M.	Cross Section 1-1′
M-2.	Sketch by Hershey
N.	Sketch by Wiley
O.	Sketch by Hershey
P.	Sketch by Hershey
Q.	Plan Map
R.	Cross Section through West End Line of Ontario
S.	Sketch
T.	Sketch
V.	Tracing
W.	Sketch by Mr. Boehmer
X.	Model—solid with Celluloid
Y.	Model—Fault detached
Z.	Sample of Drag Ore

That all of said original exhibits are transmitted to the Supreme Court of the State of Idaho by order of the above entitled Court dated February fifteenth, 1913.

Witness my hand and the Seal of the said Court affixed, this twenty-first day of March, A. D. 1913.

JOHN P. SHEEHY,
Clerk District Court.

Endorsed: Filed Mar. 25, 1913, I. W. Hart, clerk.

Record Entries.

1405 SUPREME COURT,
State of Idaho, ss:

CŒUR D'ALENE, IDAHO, *March* 25, 1913.

Court met pursuant to law.

Present: Hon. James F. Ailshie, Chief Justice; Hon. Isaac N. Sullivan, Justice; Hon. George H. Stewart, Justice, and the officers of the court, when the following proceedings were had, to wit:

No. 2194.

STEWART MINING CO., Appellant,
vs.
ONTARIO MINING CO. et al., Respondents.

Ordered that this case be set for hearing on Monday, March 31st, at ten o'clock A. M.

SUPREME COURT,
State of Idaho, ss:

CŒUR D'ALENE, IDAHO, *March* 31, 1913.

Court met pursuant to adjournment.

Present: Hon. James F. Ailshie, Chief Justice; Hon. Isaac N. Sullivan, Justice; Hon. George H. Stewart, Justice, and the officers of the court, when the following proceedings were had, to wit:

1406 No. 2194.

STEWART MINING CO., Appellant,
vs.
ONTARIO MINING CO. et al., Respondents.

This cause having been heretofore set for hearing, now on this day the cause was again called, and on motion of W. E. Cullen it was ordered that James H. Hawley be permitted to appear as associate counsel for appellant, and W. E. Cullen, M. S. Gunn and A. H. Featherstone also appearing for appellant and John P. Gray and Myron A. Folsom appearing for respondents. After argument the cause was submitted and by the court ordered taken under advisement.

SUPREME COURT,
State of Idaho, ss:

BOISE, IDAHO, *May* 3, 1913.

Court met pursuant to adjournment.

Present: Hon. James F. Ailshie, Chief Justice; Hon. Isaac N. Sullivan, Justice; Hon. George H. Stewart, Justice, and the officers of the court, when the following proceedings were had, to wit:

No. 2194.

STEWART MINING CO., Appellant,
vs.
ONTARIO MINING CO. et al., Respondents.

This cause having been heretofore heard, submitted and taken under advisement by the court, and the court having fully considered the same, now on this day the cause was again called, and the decision of the court is delivered by Chief Justice Ailshie, to the effect that the judgment of the trial court be affirmed.

1407 It *it* therefore considered, adjudged and decreed by the court that the judgment of the District Court of the First Judicial District in and for the county of Shoshone in the above entitled cause be and the same hereby is affirmed, with costs in favor of respondent-

1408 In the Supreme Court of the State of Idaho, Cœur d'Alene, March Term, 1913.

STEWART MINING CO., Appellant,
vs.
ONTARIO MINING CO. et al., Respondents.

Opinion of the Court.

Filed May 3, 1913. I. W. Hart, Clerk.

Decision of Court—Mines and Minerals—Location Along Vein or Lode—Discovery Vein—Presumptions Drawn from Patent—Apex of Claim—Extralateral Rights—When End Lines Become Side Lines—Downward Course—Evidence Must Be Clear—Decree Quieting Title.

1. Under the statute of this state, sec. 4406, Rev. Codes, the decision of the trial court consists of the findings of fact and conclusions of law which must be in writing and filed with the clerk. An oral opinion announced by the court from the bench prior to making of findings of fact and conclusions of law, or a written opinion addressed to counsel which is not in the nature of findings and conclusions, is not the decision of the court, and exceptions taken thereto and assignments of error directed against such an opinion are not assignments against the decision of the court and will not call for a review thereof on appeal.

2. The statute of the United States, sec. 2322, grants to the locator of a mining claim the exclusive right of possession and enjoyment of "all veins, lodes, and ledges throughout their entire depth, the top or apex of which lies inside of such surface-lines extended downward vertically, although such veins, lodes, or ledges may so far depart from a perpendicular in their course downward as to extend outside the vertical side-lines of such surface locations,"
1409 and the words "top or apex" as there used mean the highest point in the vein. An apex must be the top or terminal edge of the vein on the surface or the nearest point to the surface and must be the top of the vein proper rather than of a spur, and must be a point from which the vein has a dip as well as a strike.

3. The words "downward course" and "course downward" contained in sec. 2322 of the United States statutes, are used interchangeably and were evidently intended to signify the course of the vein from the surface toward the center of the earth whether in a perpendicular course or on a dip or declination, and by downward course is meant a course more in the direction of the dip of the vein than of the strike or onward course of the vein. To pursue a vein in the direction of its strike at an angle of less than 45 degrees to the course of such vein would clearly not be following the vein on its "downward course" as authorized by the statute but would rather be following it on the course of its strike.

4. The general rule that where a mineral vein or lode crosses the side lines of the location, as marked on the surface, such side lines are in law end lines and that the lines that were laid off and marked as end lines are in law side lines, is subject to the exception that where the discovery vein does in fact cross the end lines of the claim as marked on the surface and such end lines are the true end lines of the claim and the side lines are the true side lines of such claim, those lines will remain such for all secondary veins having their apices within the surface boundaries of such claim, and the fact that a secondary vein may be discovered crossing the side lines will not give the locator extralateral rights beyond the vertical plane of the end lines of the claim.

1410 5. In the absence of proof as to the course of the discovery vein on a patented mining claim, the existence of the patent to the claim raises the presumption that the location was laid along the course of the vein and that the vein or lode crosses the end lines of the claim as marked on the ground, and that the side lines thereof are laid in the direction of the strike or onward course of the vein.

6. Where a mineral vein or lode has been cut off by a great and well defined fault and the end edge of the vein along the fault is left in such a position that if the fault were eroded or washed away the edge of the vein would stand out as an overhanging cliff with both a dip and a declination to the onward course of the vein of from 30 to 45 degrees, such edge of the vein is not the top or apex of the vein within the meaning and purview of sec. 2322 of the Revised Statutes of the United States. The fact that such end edge of the vein is at places curled, cupped or turned upward at varying angles from the general course or strike of the vein will not serve to convert such edges or spurs into an apex of the vein.

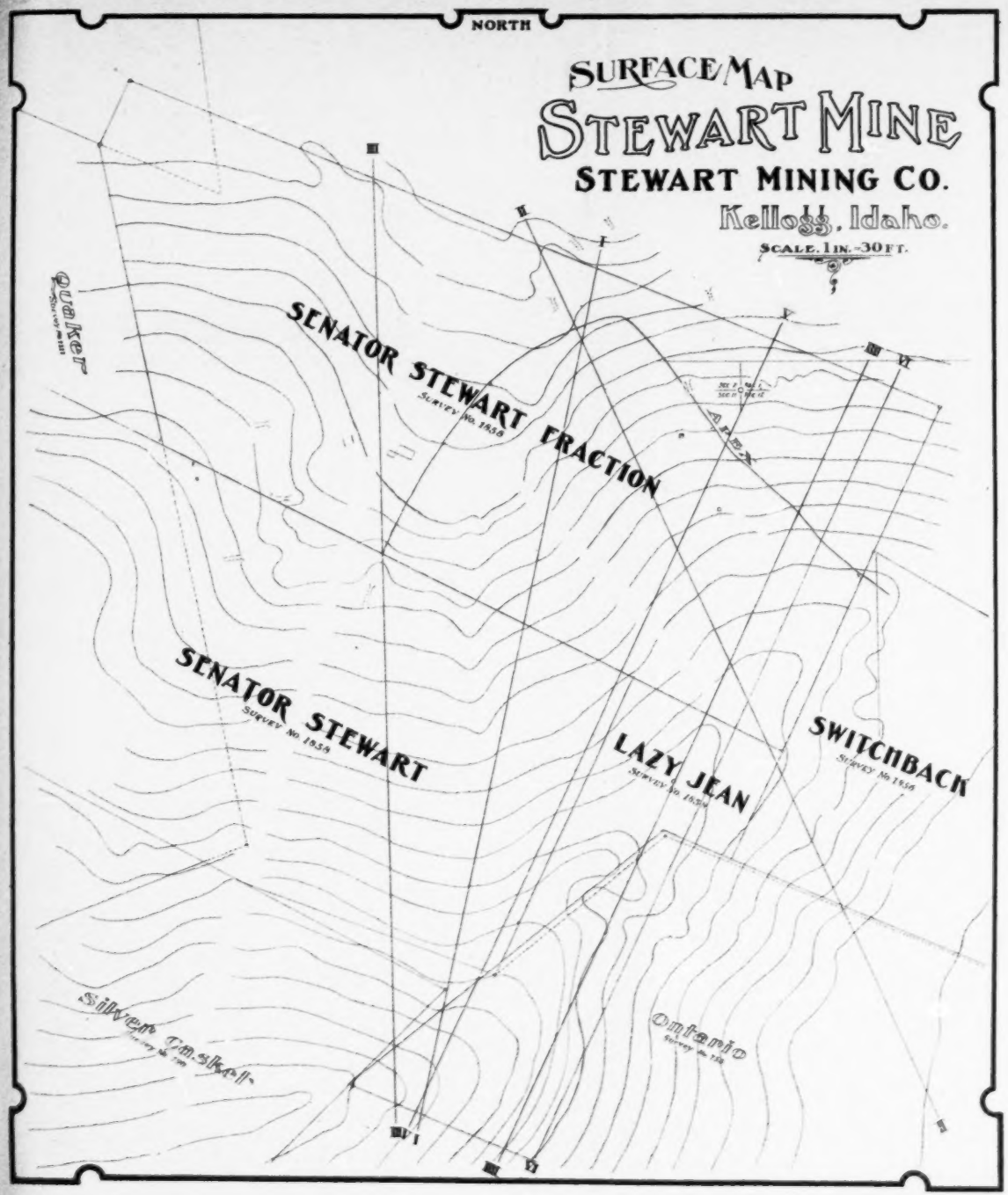
7. One who claims the right to take ore bodies from beneath the surface boundaries of a mining claim not his own under and by reason of the extralateral rights provision of sec. 2322 of the Revised Statutes of the United States, on the ground that the vein has its apex within the surface boundaries of his own location, should be required to prove clearly and satisfactorily to the court that he has the apex of such vein within the surface boundaries of his own location before being awarded the right to remove the ores from beneath the surface of the neighboring claim.

8. Under the statutes of this state, sec. 4538, an action to quiet title may be brought by any person against another who

1411 claims an estate or interest in any real property adverse to him, for the purpose of determining such adverse claim, and it was not error for the trial court to render and enter judgment in this case enjoining the appellant from "asserting any right, title or interest of, in or to the said Ontario mining claim or the ores or minerals therein adverse to the defendant Ontario Mining Co."

Appeal from the District Court of the First Judicial District for Shoshone County—Hon. W. W. Woods, Judge.

Action for Injunction and Accounting. Cross-complaint to Quiet Title. Judgment for Defendant-. Plaintiff Appealed. Affirmed.


NORTH
SURFACE MAP
STEWART MINE
STEWART MINING CO.
Kellogg, Idaho.
SCALE. 1 IN. -30 FT.
QUAKER
SENATOR STEWART FRACTION
Survey No. 1858
SENATOR STEWART
Survey No. 1855
LAZY JEAN
Survey No. 1856
SWITCHBACK
Survey No. 1856
Silver Tip Mill
Ontario
Survey No. 138

William E. Cullen, Featherstone & Fox, and M. S. Gunn, for appellant. James H. Hawley of counsel for appellant.
Myron A. Folsom, John P. Gray, and J. E. Gyde for respondent.

1412 AILSHIE, *C. J.:*

This action was commenced by the appellant for the purpose of securing an accounting and for judgment for the value of ore and mineral extracted and removed by the respondents from certain veins and ore deposits beneath the surface of the Ontario mining claim and for an injunction pendente lite, and for a permanent injunction restraining defendants from further working these ore bodies or removing ore therefrom. Application was made to the trial court for an injunction pending the trial of the action, and that application was denied and an appeal was prosecuted to this court. The order of the trial court was affirmed (Stewart Mining Co. v. Ontario Mining Co., 129 Pac. 932). The case thereafter went to trial in the district court in and for Shoshone county on the complaint of the plaintiff and answer and cross complaint on the part of the defendant and an answer by the plaintiff to defendants' cross complaint. Findings of fact and conclusions of law were subsequently made and filed and judgment was thereupon entered denying the plaintiff any relief and quieting the title of the defendant in and to the ore bodies in question.

The appellant is the owner of the Senator Stewart Fraction lode mining claim and holds a patent from the United States for the same. Jonathan Bourne, Jr., of Portland, Ore., is the owner of the Ontario lode mining claim, and the Ontario Mining Co., an Idaho corporation, is the lessee thereof and is in the possession of the same working and extracting ores therefrom. These two mining claims are not adjoining or contiguous claims but are in close proximity to each other. Plaintiff's exhibit No. 3 is a surface map which
1413 has been introduced in evidence in this case and illustrates the relative positions of these claims and also the strike and dip of the vein in the Senator Stewart Fraction as well as the apex claimed by appellant for this vein. The following is a copy of this exhibit:

(Here follows map marked page 1413.)

1414 The court found that the plaintiff has no right, title or interest in or to the ore bodies in question within the exterior boundaries of the Ontario claim. Paragraphs 8, 10, 11, 12, 13, and 14 are the material findings essential to be considered on this appeal, and we therefore set them out in full as follows:

"8. That no part of the apex of the said ore bodies lies within the lines of the Senator Stewart Fraction lode mining claim.

"10. That within said Senator Stewart Fraction lode mining claim there is a vein or lode of mineral bearing rock in place which on its onward course crosses the south side line of said Senator Stewart Fraction lode mining claim, and has a course about North 30 degrees East, and the said vein on its onward course does not reach any

other line of said claim. That the said vein is cut off on its onward course by a large fault near the north line of said claim, called the Osborne fault in this case. That the said vein on its downward course passes underneath the east line of said claim, which is described in the patent as the end line of said claim which line connects corners 1 and 2 of said claim. That the fault which cuts off said vein on its northerly end has a northwestwardly and southeastwardly course and dips southwestwardly. That the end of the vein against said fault has a course North 41 degrees West. That the end of said vein against said fault has a steeply inclined downward course southeasterly.

"11. That the end of the vein as the same is terminated on the onward course of the said vein against the fault hereinbefore referred to is the end of the vein on the line of its dip, and the said vein is undercut by the said fault in such manner that if the
1415 country below the fault was eroded, it would present the appearance of an overhanging cliff.

"12. That the said fault which terminates the said vein upon its onward course is a fault of great magnitude, and for a short distance above the fault has disturbed and broken and slightly deformed the vein, and enclosing rocks in close proximity to said fault in some places for a greater distance from the fault than in others. That the vein is also at various places cut by other faults which tend in places to flatten the vein somewhat upon its downward course.

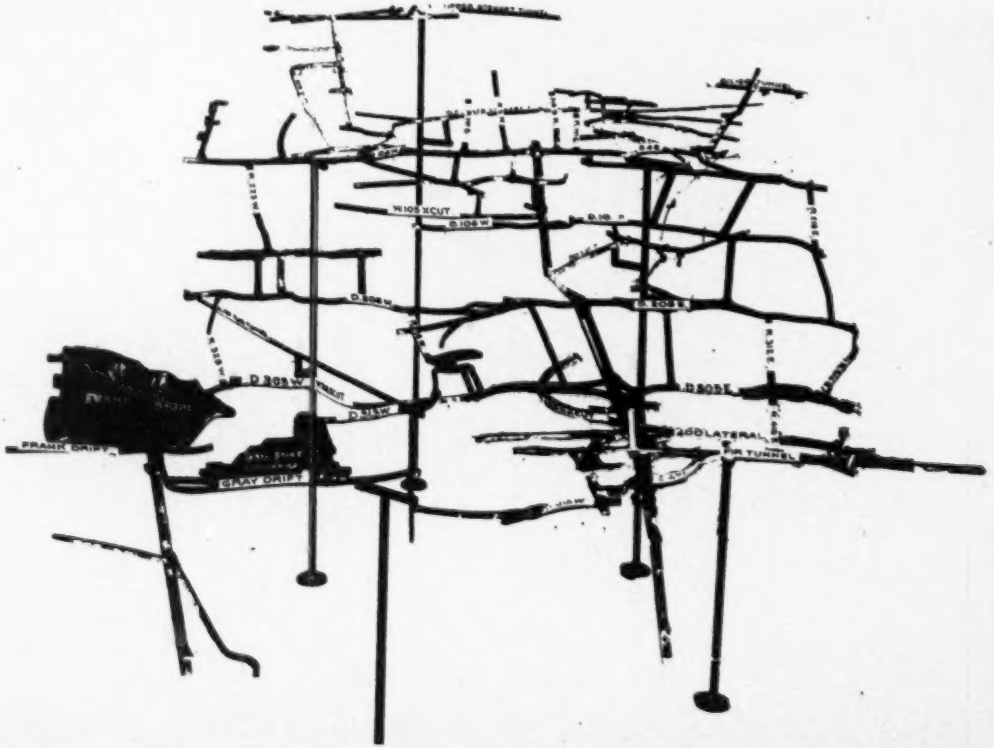
"13. That the said vein is continuous on its onward course from the line of contact with the said great fault, in this case called the Osborne fault, southerly to the ore bodies within the Ontario lode mining claim and has been followed upon the level in the drifts by the miners from the said edge of the vein to the ore bodies in the Ontario mining claim.

"14. That the top or apex of said vein which on its onward course crosses the south side line of said claim is practically level."

A great many maps and models have been introduced in evidence and have been submitted for our consideration. Defendants have submitted a model showing the course and dip of the vein as it extends through both the Stewart Fraction claim and the Ontario, and illustrating all the underground workings, including all tunnels, shafts, drifts, cross-cuts, stopes, winzes, etc., and also showing the Osborne fault where it cuts off the vein. A photographic view of this model will be incorporated herein as an aid to an understanding of such of the evidence as we may refer to hereafter. The section shown on the right of this view extending northwest and southeast represents the Osborne fault, and the Frank and Gray stopes
1416 are beneath the surface of the Ontario claim, and the Osborne fault as here shown is within the Stewart Fraction:

(Here follows diagram marked page 1416.)

There seems to be really no serious contention as to the sufficiency of the evidence to support these findings, except as to the finding with reference to the apex of the vein within the Stewart Fraction


W 105 XCUT
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D 101 E
FRANK DRIFT
CLAY DRIFT
TUNNEL

and the apex of the ore bodies within the Ontario claim in which the appellant claims the ownership, and that is more a difference of conclusion than of probative fact. That controversy here involved resolves itself more to a proper application of the rules of law governing extralateral rights to lode mining claims than to any serious conflict over the facts of the case.

The evidence in this case, it seems to us, is abundantly sufficient to show the following facts: That the vein to which appellant
1417 claims extralateral rights extends in a northeasterly and southwesterly course, and that its course is about north thirty degrees east. This vein crosses the south side line of the Stewart fraction at about right angles. It extends to within about 100 feet of the north side line of the Stewart Fraction and is there cut off in its onward course or strike by what is known throughout that mining section as the "Osborne fault." This fault is some miles in width and extends lengthwise for a number of miles across the country and is not peculiar to this vein alone but is well known by miners and prospectors throughout that mining region. This fault has a course from southeast to northwest and bears about 41 degrees west of north. The dip of this fault is southwestwardly. Of this fault and the effect it had on the end of the vein where it cut the same off on its onward course, Mr. Lawson, Professor of Geology in the State University of California, who testified in the case, said:

"Following the level along the general strike of the vein in a northeasterly direction, the vein terminates against a fault, and it has not been discovered as far as I am aware—I at least have not seen it beyond that fault, but the fault is the one which has been referred to in this case frequently as the Osborne fault. The Osborne fault is a fault of very considerable magnitude, and of great extent, which has been mapped by the geological survey in its publications in this district, but I do not vouch for the correlation of this fault with the fault as determined by the geological survey as the Osborne fault; I think there may be some doubt about that, but there is no doubt about the fact that there is a great fault here, against which the vein in its general strike abuts and stops, constituting an end to the vein in that direction. Now, the abutment of the vein upon the fault that I have referred to occasioned a
1418 local disturbance in the trend of the vein, and that deformation,—that local deformation or disturbance in the vicinity of the fault is one which may be expected to occur in such a situation. It is, however, a feature of the vein which is abnormal; it is not the regular or normal condition of the vein, particularly as regards its strike. We have a normal condition manifested in the general trend of the drift along the strike of the vein, and when we come in the vicinity of that fault we encounter an abnormality, that is to say, the strike is deflected from its normal course so that in taking into account the strike of the vein, we cannot select the small relatively insignificant portion of the vein which is just deformed by its abutment on the fault, and not take into account the larger amount that extends far beyond that deformation to the southwest."

It is further shown by some of the experts that this vein at the edge where it is cut off along the Osborne fault is at various places

turned, curled, or cupped upward, caused by the disturbance which created the fault and cut off the vein. It further appears that this vein is undercut by the Osborne fault in such a manner that if the fault were eroded or washed away, it would leave the vein standing out as an overhanging cliff. The dip of this vein to the southeast and at right angles to the strike is perhaps about 40 degrees; some witnesses say about 30 while others place it at 40 or 50 degrees.

The Stewart Fraction is a patented mining claim, and it seems to be conceded that the discovery upon which the location was made and patent procured was not upon this vein. The evidence does not disclose the course of the discovery vein or lode in the Stewart Fraction. At the close of the trial and prior to making findings of fact and conclusions of law, and,—I presume from the bench,—
1419 the court announced his purpose to decide the case in favor of the defendants and said:

"In this case of the Stewart Mining Co. against the Ontario, I have paid very close attention during the trial, and very considerable thought and investigation since. I have determined in favor of the defendant in this action. There may be some little dispute about the apex of that vein, but there is no question in my mind as to its course, and there is no question in my mind, as to the law of the case. I have a settled conviction, which it would take a decision of the Supreme Court of the United States to remove, that when a vein crosses the side line on its course, and that side line becomes an issue, and that it is the end line of that claim where it crosses, whether it crosses both end lines or not, and it is upon that ground chiefly that I award the decision to the defendants."

Appellant assigns as error that part of this statement of the court wherein he held that the southerly side line of the Stewart Fraction claim is in fact an end line, and in consequence thereof the owner is not entitled to any extralateral right to the veins southerly of the vertical plane of such line. We shall have occasion hereafter in this opinion to refer to the principle of law here involved, but for the purposes of disposing of this assignment of error it is sufficient to say that under the statutes of this state and the rule of law frequently announced by this court these remarks or observations of the trial court were no part of the decision of the court. The decision consists of the findings of fact and conclusions of law which must be in writing and filed with the clerk. (See 4406, Rev. Codes: Hamilton v. Spokane, etc., Ry. Co., 3 Ia. 164; Caldwell v. Wells, 16 Ida. 463.)

1420 The important and decisive assignment of error is lodged against the finding of the court that the termination of the vein in the Stewart Fraction along the Osborne fault is not the top or apex of the vein. There is some difference among the witnesses as to the inclination and apparent strike of the vein at certain points in this edge where it is curled up along the Osborne fault, but, taken as a whole, the evidence supports the findings, and the controversy arising on this appeal becomes a question as to the correct interpretation and application of the rule of law that should apply to the facts of this case. The whole question rests on the correct application of the apex and extralateral rights provisions of sec. 2322, U. S.

Revised Statutes. In applying this statute, we have no intention whatever of attempting any new construction of the statute or of making any new application of its provisions. This case may readily be decided upon the constructions and interpretations which have heretofore been had by the court of last resort, and we shall content ourselves with discovering and applying the rules which that court has enunciated.

The definitions of the word "apex" as used in the statute (Sec. 3222, U. S. Rev. Stats.) all reach the one inevitable conclusion that it is the highest point in the vein. (Flagstaff Silver Min. Co. v. Tarbet, 98 U. S. 469, 25 L. Ed. 253; Lindley on Mines, 2d ed., secs. 305, 309; Costigan on Mining Law, p. 137, sec. 35; Duggan v. Davey, 4 Dak. 110, 226 N. W. 887; Del Monte Min. Co. v. Last Chance Min. Co., 171 U. S. 55, 43 L. Ed. 72) but this is only a general definition, and its application to any particular vein or peculiar location may and often will call for further particularity of description.
1421 It must be the top or terminal edge of the vein on the surface or the nearest point to the surface, and it must be the top of the vein proper rather than of a spur or feeder, just as the highest point in the roof of a house would be taken to be the apex of the house, and not the chimney or flag-staff. Again, an apex is a point from which the vein has a dip as well as strike or course else it confers no extralateral right. (Costigan, Mining Law, p. 414; Gilpin v. Sierra Nevada Con. Min. Co., 2 Ia. 696.)

Appellant lays great stress on the words "downward course" as employed in the statute (Sec. 2322) and counsel have devoted many pages of their brief to a discussion of the authorities which treat of this subject. In this statute the words "downward course" and "course downward" are used interchangeably, and it was undoubtedly intended by the use of the words to signify the course of the vein from the surface toward the center of the earth. Sometimes it may happen that the "downward course" of a vein will be perpendicular and the vein will form a vertical plane, but, as a rule, there is a deflection in the downward course of these mineral veins from the perpendicular and we call this their dip, but still the course of the dip is always "downward", and when the plane of the vein reaches the horizontal then we have a blanket vein or lode, and on such a vein a locator has no extralateral right. (Costigan, Mining Laws, 414, and authorities there cited. See 1, Lindley, secs. 300 and 311.)

Some confusion has obtruded into this case through an attempt to extend the language of the courts in Bunker Hill & Sullivan M. & C. Co. v. Empire State, etc., Co., 134 Fed. 268, and Last Chance Mining Co. v. Bunker Hill & Sullivan M. & C. Co., 131 Fed. 579, to an unwarranted length. The suggestion contained in those cases that it makes no difference whether the vein be followed more on the dip than the strike, provided it be "between vertical planes drawn
1422 downward through its adjudicated end lines", is not the vital holding or ruling of the court in either case, and as we understand the decisions of the Supreme Court does not find unqualified support in any of the decisions of that court. The Supreme Court always qualifies its holdings in this respect by the condition of the

statute that the course between those vertical planes must be downward. So far as we are aware, the authorities are quite uniform in holding that the extralateral right awarded by the statute (Sec. 2322) must in all cases be pursued more upon the dip than the strike of the vein,—more upon the downward than upon the onward course of the vein. To pursue a vein in the direction of its strike at an angle of less than 45 degrees to the course thereof would clearly not be following the vein on its "downward course" as authorized by the statute.

Mr. Lindley in vol. 2, 2d. ed., of his work on Mines at sec. 589, summarizes the rule as follows: "So the downward course of the vein which may be followed in the exercise of the extralateral right is not necessarily at right angles to the strike or true course. It is that direction which the vein takes underneath the surface, on its downward course, between vertical planes drawn through the end-lines, or the side-end lines, as the case may be. This gives a segment in length, throughout the depth, within vertical planes drawn through the parallel crossed lines, equal to the length of apex covered by the surface boundaries, measured, of course, on lines on the plans of the vein, which necessarily would be, save for possible 'warping' or local curving, parallel to the course of the apex." (Duggan v. Davey, 26 N. W. 887; see also Gilpin v. Sierra Nevada Con. Min. Co., 2 Ida. 696.)

1423 It is clear to us from the wording of the statute and the reasoning of the opinions that there can be no extralateral right on the strike of the vein. (Argentine Min. Co. v. Terrible Min. Co., 122 U. S., 478; Southern Nevada Gold & S. Min. Co. v. Holmes Min. Co., 27 Nev. 107, 73 Pac. 759, 103 Am. St. 759; Colo. Cent. Consol. Min. Co. v. Turck, 50 Fed. 883, 2 C. C. A. 67; McCormick v. Varnes, 2 Utah 355; Tombstone Mill. & Min. Co. v. Way Up Min. Co., 1 Ariz. 426, 25 Pac. 794; Larned v. Jenkins, 113 Fed. 634, 51 C. C. A. 344; Costigan Min. Law, p. 414.)

Now there is no doubt in the present case about the vein crossing the southerly side line of the Stewart Fraction at about right angles to that line. If this were the Stewart Fraction discovery vein or lode, its course or strike clearly would convert this side line into an end line, and the end lines of the location on the ground would become side lines. (Flagstaff Silver Mng. Co. v. Tarbet, 98 U. S. 469, 25 L. ed. 253; Del Monte Min. Co. v. Last Chance Min. Co., 171 U. S. 55, 43 L. ed. 72; Iron Silver Min. Co. v. Elgin Min. & S. Co., 118 U. S. 196, 30 L. ed. 98; Argentine Min. Co. v. Terrible Min. Co., 122 U. S. 478, 30 L. ed. 1140; King v. Amy & S. Consol. Min. Co., 152 U. S. 222, 38 L. ed. 419.) It was undoubtedly this line of authorities that the trial court had in mind when announcing his oral opinion prior to making his findings of fact and conclusions of law, and it is clear beyond doubt that if the southerly side line of the Stewart Fraction may be regarded as a side-end line, that this conclusion alone would be decisive against appellant. In that view of the matter, appellant could not pass beyond this end line southerly, and its only extralateral right would be easterly between the extended parallel vertical planes of its side-end lines. (Flagstaff Silver

1424 Min. Co. v. Tarbet, 98 U. S. 469, 25 L. ed. 253; Del Monte

M. & M. Co., v. Last Chance M. & M. Co., 171 U. S. 55, 43 L. ed. 72; Walrath v. Mining Co., 171 U. S. 306, 43 L. ed. 177.)

There is only one consideration which can possibly prevent treating the southerly side line of the Stewart Fraction as an end line in measuring appellant's right to pursue the vein beyond the exterior boundaries of its location, and that is the rule announced in Iron Silver Min. Co. v. Elgin M. & S. Co., 118 U. S., 196, 30 L. ed. 98; Last Chance Min. Co. v. Tyler Min. Co., 157 U. S. 683, 39 L. ed. 859; Walrath v. Champion Min. Co., 171 U. S. 293, 43 L. ed. 177; and Del Monte v. Last Chance Min. Co., 171 U. S. 55, that the course of the primary or discovery vein definitely determines the end lines and side lines for all veins having their apices within the exterior boundaries of the location. (See Costigan on Mines, p. 448; Snyder on Mines, sec. 885; Cosmopolitan Min. Co. v. Foote, 101 Fed. 518.) In other words, the courts have held that the locator of a mining claim cannot treat the end lines of his location as the true end lines for the purpose of one vein having its apex within the surface boundary of the claim and pursue his extralateral rights on that vein in one direction, and then claim that those same end lines are side lines with reference to another vein having its apex within the surface boundaries of the location so as to enable him to pursue his extralateral right on the secondary vein in substantially the same direction as the course or strike of his primary or discovery vein.

It is claimed by appellant that the Stewart Fraction, being a patented claim and the vein in controversy for which extralateral rights are asserted not being the discovery or primary vein and there being no evidence as to the course or strike of the discovery vein, we must assume that the surface location was made along the course of the vein. (Calhoun Gold Min. Co. v. Ajax Min. Co., 182 U. S. 499, 45 L. ed. 1200; Work Min. & Mill. Co. v. Dr. Jack Pot Mining Co., 194 Fed. 620; Enterprise Min. Co. v. Rico-Aspen Consol. Min. Co., 167 U. S. 108, 42 L. ed. 96; Ajax Gold Min. Co. v. Hilkey, 72 Pac. 447, 31 Colo. 131, 102 Am. St. 23) and that the end lines cross the discovery vein and become the end lines for all veins having their apices within the surface boundaries of the location. In the absence of proof as to the course of the discovery vein, this presumption undoubtedly arises, but it is doubtful if it has any application in a case where no question arises over any fact, the existence of which was essential to secure the patent, or where the action in no way involves the discovery vein or the right of the locator to pursue it in any manner or direction, and the party against whom the presumption is invoked was not a party or privy to the location or patent proceedings. But for the purposes of this case, we shall proceed on the theory that a legal presumption arises from the issuance of patent to the Stewart Fraction that the end lines as established on the ground are the true end lines for all the purposes of this case. If then the edge of the vein along the Osborne fault would meet the requirements of the statute as the apex of a vein, appellant would doubtless be entitled to pursue this vein beyond the vertical plane of its south side line as long as it could do so on the downward course of the vein. Under no rule or definition to which our attention has

1425

been called can the end edge of the vein along the Osborne fault be treated as an apex of the vein and ore bodies here in question which are being worked beneath the surface boundaries of the On-
1426 tario. We cannot understand how an overhanging end edge of a vein, cut off as the evidence shows this has been, can in any sense be called the top or apex of the vein. In our opinion, there is much slighter reason for holding this an apex than there was for holding the side edge of the vein in the Sitting Bull location an apex, which is discussed so tersely and clearly in Duggan v. Davey, 26 N. W. 887, and to which Mr. Lindley refers as being "one of the most interesting and instructive of all the adjudicated cases involving the interpretation of the terms 'top' or 'apex'." (1 Lindley, 2d ed., sec. 310.) Yet in that case the court denied the Sitting Bull any extra-lateral rights, on the ground that it had no apex within its exterior boundaries.

Counsel for respondent have incorporated in their brief a diagram showing the Sitting Bull location and line of vein exposure, and the Stewart Fraction and vein, for purposes of comparison, and we are appending it herein for the purpose of showing the similarity between the two veins in the matter of strike and dip:

(Here follows diagram, marked page 1426.)

1427 The maps and models introduced all tend to support the contention that any pursuit of this vein by appellant beyond the south side line of the Stewart Fraction along a line parallel to the vertical plane of its east end line would be about horizontal rather than downward. This brings us to a principle of law which has been recognized or in some respect averted to in some of the extralateral rights cases, to the effect that one who claims such a right and seeks to take ore bodies from beneath the surface boundaries of another location, must prove clearly and satisfactorily that he has the apex of the vein or lode within the surface boundaries of his location and that he is pursuing the vein on its "downward course." (Consolidated Co. v. Champion Co., 63 Fed. 540; St. Louis Co. v. Montana Co., 194 U. S. 235; Duggan v. Davey, 26 N. W. 887.) Where the evidence is doubtful and uncertain, the court ought to decline its aid to one who is invoking its decree in order to enable him to pass beyond his own side lines and remove ore bodies from beneath the location of another. Here, too, the Ontario is the senior location by many years, and before a junior location may interfere with ore deposits under the surface of the senior location the grounds on which the right is asserted ought to be made very clear.

Some suggestion has been made in the briefs to the effect that the Stewart Company discovered and developed this vein and that the Ontario Company thereafter took advantage of appellant's discovery and development of the vein and thereupon prosecuted the work within the planes of their own boundary lines so as to tap this ore

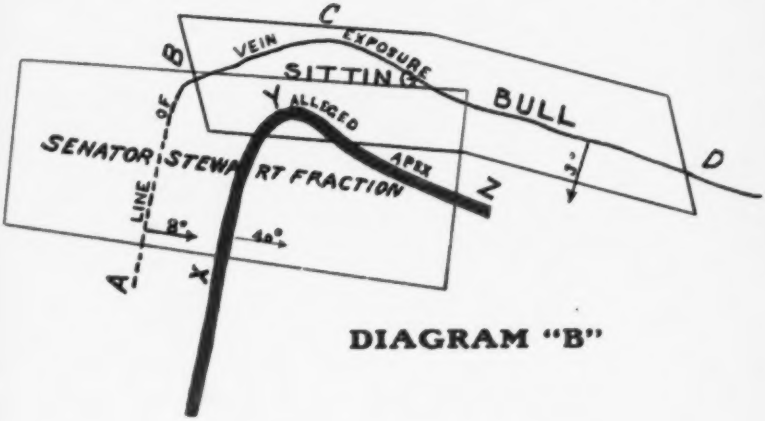

DIAGRAM "B"

1426.

body and extract and remove it from the claim, and that the Ontario Company is in fact profiting from the discovery made by the Stewart Company. The evidence discloses that the principal ore
1428 bodies in the Ontario have been opened up and worked by the Ontario Company through what is known as the Silver King adit or tunnel, for a half interest in which the Ontario company paid the appellant herein the sum of $10,000, and it was known and understood at the time of this purchase that the purpose of procuring the right to use the tunnel was to develop, open up and work the ore bodies in the Ontario claim. This tunnel transaction would in no way preclude or determine any legal right which appellant had to pursue a vein beneath the surface of the Ontario claim, but it does in a measure refute the charge of bad faith which has been suggested by appellant. It might be said, with equal support from the record, that the appellant never thought of having any extralateral rights beneath the surface of the Ontario claim until after the Ontario company opened up and developed large and rich ore bodies in that claim.

Lastly, appellant complains of that part of the judgment of the court which enjoins and restrains appellant from "asserting any right, title or interest in or to the said Ontario mining claim or the ores or minerals therein, adverse to the Ontario mining company." The appellant was the owner of the Switchback claim shown on the first diagram herein, and it now claims that this decree prejudices the Stewart mining company from subsequently asserting an apex right to this vein in the Switchback claim and that no decree should have been entered which would in any way effect their rights under the Switchback location. The Ontario company filed a cross complaint, and, among other things, alleged and charged that the Stewart mining company had no right whatever in or to the ore bodies beneath the surface of the Ontario location and asked that the Stewart company be required to come in and set up whatever right or claim it might have by reason of any of its locations to the ore bodies beneath the surface of the Ontario location. To this
1429 cross-complaint the appellant herein answered, setting up its rights under the Switchback location and that the Switchback is adjacent to and situated easterly of the Senator Stewart Fraction claim and that it is also adjacent to and situated northerly of the Ontario location. It then alleged "That the vein or lode hereinbefore described, the apex of which is within the Senator Stewart Fraction quartz lode mining claim, extends on its strike into said Switchback mining claim and the apex thereof is within the boundaries of said Switchback mining claim and follows an easterly direction along said claim for a considerable distance and said vein has a downward course from said apex in a southerly direction and towards said Ontario mining claim. That said vein and the apex thereof within said Switchback claim have not been explored or developed sufficiently to determine the extent to which said vein and the apex thereof are within said Switchback claim, or the depth to which said vein extends in its downward course."

Evidence was introduced showing that this vein at the end edge along the Osborne fault passes beneath the westerly end line of the

Switchback upon the same inclination of its general dip along that fault. It is also shown that a drift was driven from the Switchback into these same ore bodies in the Ontario. While the Switchback has not been worked to any extent, the evidence in this case shows clearly the course and dip of the vein, and if the northerly end edge of this vein along the Osborne fault did not constitute an apex within the surface boundaries of the Stewart Fraction, it does constitute an apex within the boundaries of the Switchback, and the appellant could not recover under its Switchback location for the same reason that it cannot recover under the Stewart Fraction location.

1430 Again, in the answer to the cross-complaint, as above quoted, it was alleged that this vein passed through the Switchback in an easterly direction on the course of its strike. As we have above set forth, the strike of this vein is not easterly or southeasterly as claimed by appellant, but it is southerly, and so for this reason they could not recover under the right to pursue this vein into the Ontario under the Switchback location.

We think the court properly entered its decree quieting respondent's title as well against the Switchback location as against the Stewart Fraction location. (U. S. Mining Co. v. Lawson, 207 U. S. 1; Last Chance Co. v. Bunker Hill Co., 131 Fed. 539.)

Under the statute of this state, sec. 4538, Rev. Codes, an action to quiet title may be brought by any person against another who claims an estate or interest in any real property, adverse to him, for the purpose of determining such adverse claim. (Frye v. Summers, 4 Ida. 424; Johnson v. Hurst, 10 Ida. 308; Shields v. Johnson, 10 Ida. 476; Coleman v. Jaggers, 12 Ida. 125, 118 Am. St. 207; Wilson v. Linder, 18 Ida. 444.)

The judgment of the trial court should be affirmed, and it is so ordered, with costs in favor of respondent.

Sullivan and Stewart, JJ., Concur.

1431 In the Supreme Court of the State of Idaho.

STEWART MINING COMPANY, Appellant,

vs.

ONTARIO MINING COMPANY, STANLEY A. EASTON and MYRON A. FOLSOM, Respondents.

Assignment of Errors.

Now comes the Stewart Mining Company, appellant in the above entitled cause, and says that the Supreme Court of the State of Idaho erred in its decision and judgment in said cause as appears from the record therein and that the errors committed are as follows, to-wit:

I.

The said court erred in holding and deciding that in the exercise of the extralateral right provided for in and conferred by section 2322 of the Revised Statutes of the United States a vein cannot be followed more along the strike than on the dip thereof.

II.

The said court erred in holding and deciding that the words "downward course" and "course downward" in Section 2322 of the Revised Statutes of the United States have reference to a course more along the strike than on the dip of a vein.

III.

The said court erred in holding and deciding that in the exercise of the extralateral right provided for in and conferred
1432 by section 2322 of the Revised Statutes of the United States one cannot follow a vein at an angle of less than 45° to the course or strike of said vein.

IV.

The court erred in holding and deciding that the words "downward course" as used in section 2322 of the Revised Statutes of the United States have reference to a course at an angle of 45° or more to the strike of such vein.

V.

The Court erred in holding and deciding that the course pursued in following the vein in controversy from the termination, end or edge thereof, along the Osborne Fault beneath the surface of the Senator Stewart Fraction claim to the part of the vein or ore bodies therein contained, beneath the Ontario claim, between vertical planes drawn downward through the end lines of the Senator Stewart Fraction claim extended in their own direction indefinitely, along vertical planes parallel with the vertical planes of said end lines extended, as aforesaid, is not a downward course.

VI.

The court erred in holding and deciding that the termination, edge or end of the vein in controversy in said cause against or along the Osborne Fault beneath the surface of the Senator Stewart Fraction claim is not a top or apex thereof within the meaning of the words "top or apex" as used in section 2322 of the Revised Statutes of the United States.

VII.

The court erred in holding and deciding that the appellant has no extralateral right to the vein and ore bodies therein beneath the Ontario Quartz Lode Mining claim, between vertical planes drawn downward through the end lines of the Senator Stewart
1433 Fraction claim extended, indefinitely.

VIII.

The court erred in holding and deciding that the appellant is not the owner of the vein and the ore bodies therein contained beneath

the Ontario Quartz Lode Mining claim between vertical planes drawn downward through the end lines of the Senator Stewart Fraction claim extended in their own direction indefinitely.

IX.

The court erred in holding and deciding that said vein on its downward course passes underneath the east end line of the said Senator Stewart Fraction claim.

X.

The court erred in holding and deciding that the said Osborne Fault terminates said vein on its onward course.

XI.

The court erred in holding and deciding that said vein crosses the southerly side line of the Senator Stewart Fraction claim at about right angles to that line.

XII.

The court erred in holding and deciding that the respondent, the Ontario Mining Company, is entitled to have its leasehold interest in the Ontario claim quieted against any claim which the appellant may hereafter assert to said vein within the Ontario claim based on the ownership by appellant of the Switchback Quartz Lode Mining claim.

XIII.

The court erred in holding and deciding that the termination, end or edge of said vein in the Switchback claim is not a top or apex within the meaning of the words top or apex as used in section 2322 of the Revised Statutes of the United States.

1434

XIV.

The court erred in holding and deciding that the appellant has no extralateral right to and is not the owner of that part of the vein in the Ontario claim between vertical planes drawn downward through the end lines of the Switchback claim extended in their own direction indefinitely.

XV.

The court erred in affirming the judgment of the lower court.

Wherefore, the appellant Stewart Mining Company prays that for the errors aforesaid and other errors appearing in the record of the said Supreme Court in said cause to its prejudice that the said judgment may be reversed.

FEATHERSTONE & FOX,
CULLEN, LEE & HINDMAN,
GUNN, RASCH & HALL,
Attorneys for Stewart Mining Co.

1434½ [Endorsed:] No. 2194. Copy. In the Supreme Court of the State of Idaho. The Stewart Mining Company, Appellant, v. Ontario Mining Company, Stanley A. Easton and Myron A. Folsom, Respondents. Assignment of Errors. Filed this 29 day of May, 1913. I. W. Hart, Clerk. Featherstone & Fox. Cullen, Lee & Hindman, and Gunn, Rasch & Hall, Attorneys for Appellant.

1435 In the Supreme Court of the State of Idaho.

STEWART MINING COMPANY, Appellant,
v.
ONTARIO MINING COMPANY, STANLEY A. EASTON and MYRON A. FOLSOM, Respondents.

Petition for Writ.

To the Honorable James F. Ailshie, Chief Justice of the Supreme Court of the State of Idaho:

The petition of the Stewart Mining Company, a corporation organized and existing under and by virtue of the laws of the State of Idaho, respectfully shows:

That on the 3rd day of May, 1913, the Supreme Court of the State of Idaho rendered a final judgment against your petitioner in a cause wherein your petitioner was appellant and the Ontario Mining Company, a corporation, Stanley A. Easton and Myron A. Folsom were respondents, affirming the judgment of the district court of the first judicial district of the State of Idaho in and for the County of Shoshone, in said cause; and that said Supreme Court is the highest court in said state in which a decision in said cause can be had.

That as appears from the record in said cause your petitioner is the owner, in possession and entitled to the possession of the Senator Stewart Quartz Lode Mining claim for which a United States patent has issued; that one Jonathan Borne, Jr., is the owner of the Ontario Quartz Lode Mining claim for which a United States patent has issued and the respondent the Ontario Mining Company, has a leasehold interest in said claim and is in possession and entitled to the possession of same and is engaged in mining and
1436 extracting ore therefrom; and that beneath the surface of said Ontario claim is a certain vein which terminates and has its end or edge along a large fault known as the Osborne Fault, beneath the surface of the said Senator Stewart Fraction claim.

And your petitioner further represents that, as appears from the record in said cause, it claims the extralateral right to and the ownership of that part of said vein and the ore bodies therein contained beneath the surface of the said Ontario claim within the vertical planes of the end lines of the Senator Stewart Fraction claim extended,—said claim being based upon the contention that the termination, end or edge of said vein along said Osborne Fault beneath the surface boundaries of the Senator Stewart Fraction claim

constitutes and is the apex of said vein in said Ontario claim, and that said vein can be followed on a downward course from said apex to and beneath the Ontario claim along vertical planes parallel with the vertical planes of the end lines of the Senator Stewart Fraction claim extended as aforesaid.

That the said Supreme Court decided that the said termination, end or edge of said vein beneath the surface of the Senator Stewart Fraction claim against said fault is not the top or apex thereof within the meaning of the words top or apex as the same appear in section 2322 of the Revised Statutes of the United States, and that the course pursued in following said vein from said termination along vertical planes parallel with the vertical planes of the end lines of said Senator Stewart Fraction claim extended is not a downward course within the meaning of the words downward course in section 2322 of the Revised Statutes of the United States, as such course is more along the strike than on the dip of said vein or at an angle of less than 45° to the strike thereof, for which reasons the claim of your petitioner of extralateral right to and ownership of that part
1437 of said vein and the ore bodies therein beneath the Ontario claim was denied by the said Supreme Court.

That in so holding and deciding the said Supreme Court denied to your petitioner a title and right held by your petitioner under the statutes of the United States and committed error to the prejudice of your petitioner as will more fully appear from the assignments of error filed with this petition.

Wherefore, your petitioner prays the allowance of a writ of error returnable to the Supreme Court of the United States and for citation; and your petition- will ever pray etc.

FEATHERSTONE & FOX,
CULLEN, LEE & HINDMAN,
GUNN, RASCH & HALL,
Attorneys for Petitioner.

Let the writ of error issue as prayed upon the execution of a bond by the appellant to the respondents in the sum of $1,000.00.

J. F. AILSHIE,
Chief Justice of the Supreme Court of the State of Idaho.

1437½ [Endorsed:] No. 2194. In the Supreme Court of the State of Idaho. Stewart Mining Company, Appellant, v. Ontario Mining Company, Stanley A. Easton and Myron A. Folsom, Respondents. Petition for Writ of Error. Filed this 29 day of May, 1913. I. W. Hart, Clerk. Featherstone & Fox, Cullen, Lee & Hindman, and Gunn, Rasch & Hall, Attorneys for Appellant.

1438 In the Supreme Court of the State of Idaho.

STEWART MINING COMPANY, Appellant,
v.
ONTARIO MINING COMPANY, STANLEY A. EASTON and MYRON A. FOLSOM, Respondents.

Bond.

Know all men by these presents: That we, Stewart Mining Company, a corporation, as principal, and United States Fidelity & Guaranty Company of Baltimore, Maryland, as surety, are held and firmly bound unto the Ontario Mining Company, a corporation, Stanley A. Easton and Myron A. Folsom in the sum One Thousand Dollars ($1000.00)
of [Five Hundred Dollars ($500.00)]* to be paid to W. W. H. the said obligees for which payment well and truly to be made we bind ourselves and our and each of our successors and assigns jointly and severally by these presents.

Dated this 29th day of May, 1913.

Whereas, the above named Stewart Mining Company has prosecuted a writ of error to the Supreme Court of the United States to reverse the judgment rendered in the above entitled action by the Supreme Court of the State of Idaho.

Now therefore, the condition of this obligation is such that if said Stewart Mining Company shall prosecute said writ of error to effect, and answer all costs if it fails to make good its plea, then this obligation shall be void; otherwise to remain in full force and effect.

STEWART MINING COMPANY,
By W. E. CULLEN, *Its Attorney.*

1439 THE UNITED STATES FIDELITY & GUARANTY COMPANY OF BALTIMORE, MARYLAND,
By F. W. PATTERSON, *Its Attorney in Fact.*
" R. L. WEBSTER, *Its Attorney in Fact.*
W. W. HINDMAN.

I hereby approve the foregoing bond and the surety thereon this 29th day of May, 1913.

J. F. AILSHIE,
Chief Justice of the Supreme Court of the State of Idaho.

Endorsed: Bond. Filed May 29, 1913. I. W. Hart, Clerk.

[* Matter enclosed in brackets erased in copy.]

1440 *Writ of Error.*

UNITED STATES OF AMERICA, *ss:*

The President of the United States of America to the Honorable the Justices of the Supreme Court of the State of Idaho, Greeting:

Because, in the record and proceedings, as also in the rendition of the judgment of a plea which is in the Supreme Court of the State of Idaho, before you, or some of you, being the highest court of law or equity of the said state in which a decision could be had in an action or suit between the Stewart Mining Company (a corporation), plaintiff and appellant, and the Ontario Mining Company (a corporation), Stanley A. Easton and Myron A. Folsom, defendants and respondents, wherein was drawn in question the validity of a treaty or statute of, or an authority exercised under, the United States, and the decision was against their validity; or wherein was drawn in question the validity of a statute of, or an authority exercised under, said State, on the ground of their being repugnant to the Constitution, treaties, or laws of the United States, and the decision was in favor of their validity; or wherein was drawn in question the construction of a clause of the Constitution, or of a treaty, or statute of, or commission held under the United States, and the decision was against the title, right, privilege, or exemption specially set up or claimed under such clause of the said Constitution, treaty, statute, or commission; a manifest error hath happened to the great damage of the said Stewart Mining Company, as by its complaint appears. We being willing that error, if any hath been, should be duly corrected, and full and speedy justice done to the parties aforesaid in this behalf, do command you, if judg-
1441 ment be therein given, that then under your seal, distinctly and openly you send the record and proceedings aforesaid, with all things concerning the same, to the Supreme Court of the United States, together with this writ, so that you have the same at Washington, on the 28th day of July next, in the said Supreme Court, to be then and there held, that the record and proceedings aforesaid being inspected, the said Supreme Court may cause further to be done therein to correct that error, what of right, and according to the laws and customs of the United States, should be done.

Witness the Honorable Edward D. White, Chief Justice of the United States, the 29th day of May, in the year of our Lord one thousand nine hundred and thirteen.

[Seal United States District Court, Idaho, 1890.]

A. L. RICHARDSON,
Clerk of the United States District Court
for the District of Idaho.
By E. B. YARINGTON,
Deputy Clerk.

Allowed by—
J. F. AILSHIE,
Chief Justice of the Supreme Court
of the State of Idaho.

1441½ [Endorsed:] No. 2194. Writ of Error. To the Honorable, the Justices of the Supreme Court of the State of Idaho, in the case of Stewart Mining Company v. Ontario Mining Company et al. Lodged May 29th, 1913. I. W. Hart, Clerk.

1442 In the Supreme Court of the State of Idaho.

STEWART MINING COMPANY, Appellant,
v.
ONTARIO MINING COMPANY, Respondent.

Certificate of Lodgment.

I, I. W. Hart, Clerk of the Supreme Court of the State of Idaho do hereby certify that on the 29th day of May, 1913, the original of the foregoing supersedeas bond was lodged with me as such clerk, and the following endorsement made thereon: "Filed May 29, 1913, I. W. Hart, Clerk."

I also certify that the original foregoing writ of error was lodged with me as the clerk of said Court on the 29th day of May, 1913, and the following endorsement made upon the said original writ: "Lodged May 29, 1913, I. W. Hart, Clerk."

In witness whereof, I have hereunto set my hand and affixed the seal of the Court, this 6th day of June, 1913.

[Seal of Supreme Court, State of Idaho.]

I. W. HART, *Clerk.*

1443 *Citation.*

UNITED STATES OF AMERICA, *ss*:

To the Ontario Mining Company (a corporation), Stanley A. Easton, and Myron A. Folsom, Greeting:

You are hereby cited and admonished to be and appear at the Supreme Court of the United States at Washington, D. C., within sixty days from the date hereof, pursuant to a writ of error filed in the office of the Clerk of the Supreme Court of the State of Idaho, wherein the Stewart Mining Company is plaintiff in error and you are defendants in error, to show cause, if any there be, why the judgment rendered against the said plaintiff in error, as in the said writ of error mentioned, should not be corrected, and why speedy justice should not be done to the parties in that behalf.

Witness the Honorable James F. Ailshie, Chief Justice of the Supreme Court of the State of Idaho, this 29th day of May, in the year of our Lord one thousand nine hundred and thirteen.

[Seal of Supreme Court, State of Idaho.]

J. F. AILSHIE,
Chief Justice of the Supreme Court of the State of Idaho.

Attest:
I. W. HART,
Clerk of the Supreme Court of the State of Idaho.

Service of the foregoing citation admitted and receipt of copy thereof acknowledged this 31st day of May, 1913.

MYRON A. FOLSOM,
Attorney for Def'ts.

1443½ [Endorsed:] No. 2194. In the Supreme Court of the State of Idaho. Stewart Mining Company, Appellant, v. Ontario Mining Company, Stanley A. Easton and Myron A. Folsom, Respondents. Citation to Ontario Mining Company, Stanley A. Easton and Myron A. Folsom. Filed June 2, 1913. I. W. Hart, Clerk. Featherstone & Fox, Cullen, Lee & Hindman, and Gunn, Rasch & Hall, Attorneys for Stewart Mining Co.

1444 In the Supreme Court of the State of Idaho.

STEWART MINING COMPANY, Appellant,
v.
ONTARIO MINING COMPANY, STANLEY A. EASTON and MYRON A. FOLSOM, Respondents.

Order.

On motion of the attorney for appellant:

It is ordered that in addition to the transcript of the record on appeal in this action that the clerk of this court certify and transmit to the clerk of the Supreme Court of the United States the exhibits in said cause to be by him safely kept and returned to this court on the final determination of said cause in said Supreme Court.

Dated this 29th day of May, 1913.

J. F. AILSHIE,
Chief Justice.

1444½ [Endorsed:] Copy. No. 2194. In the Supreme Court of the State of Idaho. Stewart Mining Company, Appellant, v. Ontario Mining Company, Stanley A. Easton and Myron A. Folsom, Respondents. Order. Filed this 29th day of May, 1913. I. W. Hart, Clerk. Featherstone & Fox, Cullen, Lee & Hindman, and Gunn, Rasch & Hall, Attorneys for Appellant.

1445 In the Supreme Court of the State of Idaho.

STEWART MINING COMPANY, Appellant,
v.
ONTARIO MINING COMPANY, STANLEY A. EASTON and MYRON A. FOLSOM, Respondents.

Præcipe.

To the Clerk of the above entitled court:

You will please prepare transcript of the record of this cause to be filed in the office of the clerk of the Supreme Court of the United States pursuant to the command of the writ of error issued in said

cause and you will also please identify and certify for transmission to the clerk of the Supreme Court of the United States with said transcript the exhibits in said cause. Said transcript to consist of a copy of the record on appeal in said cause, the opinion of the Supreme Court, the petition for writ of error, assignment of errors, order with reference to certification of exhibits, and bond on writ of error to Supreme Court of United States.

You will also transmit in connection with said papers to the clerk of the Supreme Court of the United States the original writ of error and original citation.

Dated this 29th day of May, 1913.

FEATHERSTONE & FOX,
CULLEN, LEE & HINDMAN,
GUNN, RASCH & HALL,
Attorneys for Appellants.

1445½ [Endorsed:] No. 2194. In the Supreme Court of the State of Idaho. Stewart Mining Company, Appellant, v. Ontario Mining Company, Stanley A. Easton and Myron A. Folsom, Respondents. Præcipe. Filed this 29th day of May, 1913. I. W. Hart, Clerk. Featherstone & Fox, Cullen, Lee & Hindman, and Gunn, Rasch & Hall, Attorneys for Appellant.

1446 In the Supreme Court of the State of Idaho.

STEWART MINING COMPANY, Appellant,

v.

ONTARIO MINING COMPANY, STANLEY A. EASTON and MYRON A. FOLSOM, Respondents.

Clerk's Certificate.

I, I. W. Hart, clerk of the Supreme Court of the State of Idaho, do hereby certify that the foregoing from page 1 to 1445 inclusive, is a complete and true transcript of the record and proceedings in the case of the Stewart Mining Company, Stanley A. Easton and Myron A. Folsom, respondents, with the exception of the exhibits introduced in evidence in said cause and referred to in said transcript, as appears from the papers and records in said cause on file in my office; that there is also included in said transcript a true and complete copy of the opinion of the Supreme Court of the State of Idaho in said cause and of the petition of the appellant above named for the writ of error annexed hereto and of the assignment of errors filed in connection with such petition.

I further certify that pursuant to an order of the Chief Justice of the Supreme Court of Idaho the exhibits in said cause, consisting of models, maps and other things, are identified by me and certified separately for transmission with this transcript to the office of the clerk of the Supreme Court of the United States in Washington, D. C.

I also certify that there is attached to said transcript the writ of error and citation issued in said cause, which, together with the said transcript and exhibits are to be transmitted to the Supreme
1447 Court of the United States in obedience to the command of said writ of error.

Witness my hand and seal of said court this 7th day of June, 1913.

[Seal of Supreme Court, State of Idaho.]

I. W. HART,
Clerk of the Supreme Court of the State of Idaho.

1448 In the Supreme Court of the State of Idaho.

STEWART MINING COMPANY, Appellant,
v.
ONTARIO MINING COMPANY, STANLEY A. EASTON and MYRON A. FOLSOM, Respondents.

Certificate of Clerk to Exhibits.

I, I. W. Hart, Clerk of the Supreme Court of the State of Idaho, do hereby certify that I have identified and transmitted to the Clerk of the Supreme Court of the United States at Washington, D. C. the following exhibits in the above entitled case, the same having been certified by the Clerk of the District Court for Shoshone County, as having been introduced in evidence in said case in the lower court and having been transmitted by him to this Court on the appeal of said case:

Plaintiff's exhibits Nos. 1 to 14 inclusive, consisting of maps.
15 A. Glass Model.
15 B. Tracing Model Base.
16, 19 inclusive. Photographs.
20. Block and Base (model).
21. Block and Base (model).

Defendant's exhibits B, C, D, E, F, G, H, J and K, consisting of maps, diagrams and sketches.
L. Model of Workings.
M, M-2, N, O, P, Q, R, S, T and W, consisting of maps and sketches.
Z. Sample of Ore in canvas bag.

There were found among said exhibits the following, upon which no marks of identification appear, and which I have also transmitted with above exhibits:

1 Map.
1 Tracing.
2 Models.

In witness whereof, I have hereunto set my name and affixed the Seal of the Court, this 7th day of June, 1913.

[Seal of Supreme Court, State of Idaho.]

I. W. HART, *Clerk.*

1449 In the Supreme Court of the State of Idaho.

STEWART MINING COMPANY, Plaintiff in Error,
vs.
ONTARIO MINING COMPANY, Defendant in Error.

Return to Writ.

UNITED STATES OF AMERICA,
Supreme Court of Idaho, ss:

In obedience to the commands of the within writ, I herewith transmit to the Supreme Court of the United States a duly certified transcript of the complete record and proceedings in the within entitled case, with all things concerning the same.

In witness whereof, I hereunto subscribe my name and affix the seal of said Supreme Court, in the City of Boise, this June 7th, 1913.

[Seal of Supreme Court, State of Idaho.]

I. W. HART,
Clerk of the Supreme Court of the State of Idaho.

Costs of Suit.

Plaintiff's Costs.....	33.80,	paid by	Stewart Mining Co.
Defendants' "	50.50,	" "	Ontario Mining Co
Costs of Transcript.....	92.25,	" "	Stewart Mining Co.

I. W. HART,
Clerk Sup. Ct., Idaho.

Endorsed on cover: File No. 23,762. Idaho Supreme Court. Term No. 611. Stewart Mining Company, plaintiff in error, vs. Ontario Mining Company, Stanley A. Easton, and Myron A. Folsom. Filed June 24, 1913. File No. 23,762.

IN THE

SUPREME COURT OF THE UNITED STATES.

OCTOBER TERM, 1913.

No 611.

STEWART MINING COMPANY, A CORPORATION,
PLAINTIFF IN ERROR,

vs.

ONTARIO MINING COMPANY, A CORPORATION; STANLEY A. EASTON AND MYRON A. FOLSOM,
DEFENDANTS IN ERROR.

NOTICE.

To the Defendants in Error Above Named and Myron A. Folsom, John P. Gray, and G. E. Gyde, Their Attorneys:

You will please take notice that the plaintiff in error will, by its attorneys, at the court-room in the Capitol building, in the city of Washington, where the above-entitled court is held, upon the opening of court on the 13th day of October, 1913, or as soon thereafter as a hearing can be had, move the said court to advance said cause for argument and hearing, in accordance with the motion, in writing, attached hereto.

Said motion will be based upon the record in said cause, and upon the affidavit of M. W. Bacon, hereto attached.

Dated this 3d day of October, 1913.

CULLEN, LEE & HINDMAN,
FEATHERSTONE & FOX,
GUNN, RASCH & HALL,
Attorneys for Plaintiff in Error.

M. S. GUNN,
Helena, Montana, of Counsel
for Plaintiff in Error.

Service of the foregoing notice, and of the written motion and affidavit mentioned therein, admitted and receipt of copy of each acknowledged this 2d day of October, 1913.

MYRON A. FOLSOM,
JOHN P. GRAY,
Attorneys for Defendants in Error.

IN THE SUPREME COURT OF THE UNITED STATES.

OCTOBER TERM, 1913.

STEWART MINING COMPANY, *a Corporation, Plaintiff in Error,*

vs.

ONTARIO MINING COMPANY, *a Corporation;* STANLEY A. EASTON AND MYRON A. FOLSOM, *Defendants in Error.*

MOTION TO ADVANCE.

Comes now the plaintiff in error and moves the court to advance the above-entitled cause. Said motion is based upon the record in said cause and the affidavit of M. W. Bacon, attached hereto.

Statement of Matter Involved.

In Error to the Supreme Court of the State of Idaho.

The action involves the title to certain ore bodies beneath the surface of the Ontario Mining Claim (Patented). It is alleged by plaintiff in error that these ore bodies are in, and a part of, a vein having its apex within the Senator Stewart Fraction Mining Claim (Patented), of which plaintiff in error is the owner and in possession. Ownership of said ore bodies is asserted by plaintiff in error by virtue of the extralateral right attaching to said Senator Stewart Fraction Claim, said ore bodies being situated within the vertical planes of the end lines of said claim, extended. The Ontario claim is the property of one Jonathan Bourne, Jr. The defendant in error, the Ontario Mining Company, is lessee of said Ontario claim, and as such is, and has been, conducting mining operations in said claim. The purpose of the

action is to obtain an accounting for ore extracted by the defendant in error, the Ontario Mining Company, and for an injunction to prevent the further extraction of ore.

It is admitted that the ore bodies in question are in a part of a vein extending from the Senator Stewart Fraction Claim into the Ontario claim. It is further admitted that this vein has its termination or edge in said Senator Stewart Fraction Claim, and that said ore bodies are within the vertical planes of the end lines of said claim, extended.

The Supreme Court of Idaho decided that the termination or edge of said vein in the Senator Stewart Fraction Claim is not an "apex," within the meaning of the term "apex," as used in section 2322 of the Revised Statutes of the United States; and also decided that as the course pursued in following such vein from said termination or edge in the Senator Stewart Fraction Claim, along planes parallel with the vertical planes of the end lines of said claim extended, to the ore bodies in controversy, is more along the strike than on the dip of such vein, such course is not "downward," within the meaning of the term "downward course," as used in said section 2322 of the Revised Statutes of the United States (132 Pac. Rep., 787). Both of which decisions plaintiff in error specifies as erroneous.

Reasons for Advancement.

1. Because defendant in error, the Ontario Mining Company, is committing waste by the extraction of ore from said ore bodies, and unless said cause is advanced, before a decision of this court can be obtained, the said ore bodies, constituting the subject-matter of this action, will have been extracted and carried away, and the decision, if favorable to plaintiff in error, will be of no benefit, except as it may be made the basis of a claim against said Ontario Company for the value of such ore.

2. Because said Ontario Company has no property, except the lease of the Ontario claim, which will expire in July, 1914, the equipment for conducting mining operations in said claim, and such money as may be temporarily in the treasury of said company, by reason of which plaintiff in error would be unable to recover, except for a small part of the ore which has been extracted by said company, in the event it should be determined by this court that plaintiff in error is the owner of same.

Dated this 3d day of October, 1913.

CULLEN, LEE & HINDMAN,
FEATHERSTONE & FOX,
GUNN, RASCH & HALL,
Attorneys for Plaintiff in Error.

M. S. GUNN,
Helena, Montana, of Counsel
for Plaintiff in Error.

IN THE SUPREME COURT OF THE UNITED STATES,
OCTOBER TERM, 1913.

No. 611.

STEWART MINING COMPANY, *a Corporation, Plaintiff in Error,*

vs.

ONTARIO MINING COMPANY, *a Corporation;* STANLEY A. EASTON AND MYRON A. FOLSOM, *Defendants in Error.*

STATE OF WASHINGTON,
County of Spokane, ss:

M. W. Bacon, being first duly sworn, deposes and says: That he is and has been for more than two years last past, the general manager of the Stewart Mining Company, plaintiff in error, above named, and as such in charge of the mining operations conducted by said company. That he is acquainted with the Ontario Mining Claim, and has full knowledge of the mining operations conducted therein by the defendant in error, the Ontario Mining Company; that said defendant in error commenced mining and extracting ore from said mining claim as lessee thereof in the month of November, 1911; that prior to said date no ore had been extracted by any one from the ore bodies in controversy in this action; that prior to the first day of January, 1913, the defendant in error, the Ontario Mining Company, had mined and extracted from the ore bodies beneath the Ontario Claim, and within the vertical planes of the end lines of the Senator Stewart Fraction Claim, extended, the same being the ore bodies described in the pleadings in this action, ore of a value in excess of five hundred thousand dollars ($500,000.00); that said defendant in error has continuously conducted mining operations in the said Ontario Claim, and

extracted ore from said ore bodies since the 1st day of January, 1913, and is now engaged in extracting ore from such ore bodies; that affiant is informed and believes that said defendant in error, has, since the 1st day of January, 1913, extract ore from such ore bodies of a value in excess of five hundred thousand dollars ($500,000.00), and that it is now extracting ore from said ore bodies to the amount of approximately 6,000 tons per month, of a value of approximately nine dollars ($9.00), per ton; that if the defendant in error, the Ontario Mining Company, is permitted to continue the extraction of ore from said ore bodies, within a year all of the ore of any value in said ore bodies and between the vertical planes of the end lines of the Senator Stewart Fraction Claim, extended, will be mined and extracted; that said Ontario Mining Company has no property except the lease of said Ontario Claim, which will expire in the month of July, 1914, and such mining machinery and equipment as is being used in conducting mining operations in said Ontario Claim, and such money as may be temporarily in the treasury of said company, received from the proceeds of the sale of ore taken from said claim; that said company is wholly unable to respond in damages for the ore which it has already extracted from said Ontario Claim, and unless an early decision by this court of this cause is obtained, such decision, if favorable to plaintiff in error, will be of no advantage or benefit, except as it may enable plaintiff in error to recover from the defendant in error, the Ontario Mining Company, to the extent of the financial responsibility of said company.

M. W. BACON.

Subscribed and sworn to before me this 2d day of October, A. D. 1913.

[NOTARIAL SEAL.] CYRUS HAPPY, JR.,
Notary Public in and for the State of Washington, Residing at Spokane, Washington.

[Endorsed:] In the Supreme Court of the United States, October term, 1913. Stewart Mining Company, a corporation, plaintiff in error, *vs.* Ontario Mining Company, a corporation; Stanley A. Easton and Myron A. Folsom, defendants in error. Notice, motion, and affidavit. Cullen, Lee & Hindman, Featherstone & Fox, Gunn, Rasch & Hall, attorneys for plaintiff in error; M. S. Gunn, Helena, Montana, of counsel for plaintiff in error.

[22691]

FILED.
OCT 11 1913
JAMES H. McKENNEY,
CLERK.

IN THE

SUPREME COURT OF THE UNITED STATES.

OCTOBER TERM, A. D. 1913.

No. ~~611~~. 205.

STEWART MINING COMPANY, A CORPORATION,
PLAINTIFF IN ERROR,

vs.

ONTARIO MINING COMPANY, A CORPORATION; STANLEY A. EASTON AND MYRON A. FOLSOM,
DEFENDANTS IN ERROR.

ERROR TO THE SUPREME COURT OF THE STATE OF IDAHO.

BRIEF IN SUPPORT OF MOTION TO ADVANCE.

CULLEN, LEE & HINDMAN,
FEATHERSTONE & FOX,
GUNN, RASCH & HALL,
Attorneys for Plaintiff in Error.

M. S. GUNN,
Helena, Montana;
C. S. THOMAS,
Of Counsel.

IN THE

SUPREME COURT OF THE UNITED STATES.

OCTOBER TERM, A. D. 1913.

No. 611.

STEWART MINING COMPANY, A CORPORATION,
PLAINTIFF IN ERROR,

vs.

ONTARIO MINING COMPANY, A CORPORATION; STANLEY A. EASTON AND MYRON A. FOLSOM,
DEFENDANTS IN ERROR.

ERROR TO THE SUPREME COURT OF THE STATE OF IDAHO.

BRIEF IN SUPPORT OF MOTION TO ADVANCE.

It will not be contended that this action, the nature of which is clearly outlined in the motion, is one which involves or affects any general matter of public interest or entitled to precedence under the provisions of any act of Congress. The controversy is of a private nature, involving rights to private property in dispute between the parties thereto. Nevertheless it is of sufficient importance to justify, if not to require, the favorable consideration of our motion to advance.

The property involved consists of mines containing the precious and other metals, and valuable solely because of

the existence of these metals in the ore bodies found underneath the surface and now in dispute. If they belong to the plaintiff in error, their removal, sale, and conversion by the defendants in error is unlawful. If, in addition thereto, the defendants in error may not respond in damages should the decision of this court be unfavorable to them, plaintiff's ownership so recognized is of no value whatever.

If, on the other hand, these ores belong to the defendants in error, their right thereto should be relieved of the burden of this litigation at the earliest possible moment of time.

The important facts upon which this motion is based must be conceded. They may be thus formulated:

1. Defendants in error are, and before and since the institution of this action have been, in possession of the *locus in quo*. This possession has been constant and unbroken.

2. The defendants in possession have been engaged, during the time mentioned, in mining, extracting, selling and converting to their own use the ores and ore bodies above mentioned, and will continue to do so unless and until they are interfered with and prevented by the processes of the courts. Because of the judgment in their favor in the courts below, they have *prima facie* the right to continue their work of mining and to dispose of their ores without interference by the plaintiff in error.

3. The record, folios 1506 to 1509, contains a stipulation entered into at the trial that the defendant company had then extracted from the Gray, May, and Frank ore bodies in excess of forty thousand tons of ore, having a gross value of several hundred thousand dollars. It appears from the affidavit of Mr. M. W. Bacon, in support of our motion, that prior to the first of January, 1913, the defendant company had extracted ores from the ground in controversy to a value in excess of five hundred thousand dollars, and that since that date it had extracted as much more, and that it is now engaged in the work of extraction at the rate of ap-

proximately six thousand tons of ore per month at a value of about $9.00 per ton, and that if this extraction continues all of the ore of any value in said premises between the vertical planes of the end lines of the Senator Stewart Fraction Claim, extended, will be taken from the mine.

4. The principal, and in fact the only real, defendant is the Ontario Company. Its tenure to the property is one of leasehold, expiring in July, 1914. It has no property beyond the plant and equipment essential to its mining purposes and such moneys as from time to time are in its treasury undistributed and derived from the sale of the ores in question.

From these facts it is quite apparent that unless this case can be heard and disposed of at an early date, or the defendant in error be enjoined pending the determination of the case, the plaintiff in error, in reversing the judgment of the court below, will have gained a barren victory, the substance of its property having meanwhile been secured, enjoyed and dissipated by the defendant, the mines being valuable solely on account of the ores therein contained. This in our judgment should appeal to the sound discretion of the court and prompt it to grant our motion to advance.

This court is much more familiar with its practice as to advancing cases of a private nature than counsel representing the plaintiff in error. We are apprised, however, from inquiry of the clerk and by examination of the dockets, that it is not unusual to advance private controversies upon good cause shown. One of the cases so advanced we beg to refer to: St. Louis Company *vs.* Montana Company, reported in 204 U. S., 204.

We assume, however, that as each application depends upon its own merits, a citation of instances where these motions have been allowed would be useless. We prefer, therefore, to rely upon the facts and conditions above outlined, and which must speak for themselves.

It is hardly necessary to remind this honorable court that in cases of this character the property involved is in most instances preserved by injunction for the benefit of the ultimate owner as determined by the litigation. The record disclosed efforts made by the plaintiff in error to secure this relief during the progress of the litigation, but without avail. We might invoke the undoubted power of this court to enjoin the defendants in error, but upon due consideration we have preferred to ask for an early decision of the case upon its merits as the preferable method of procedure.

It is true that the plaintiff in error has in this litigation been up to this time unsuccessful in its effort to establish its title to the ore bodies in question. While this result and its consequences are conceded, the fact should not militate against our contention that our errors heretofore assigned are well taken and that this court should reverse the cause. We are entitled to, and as a matter of course will, receive a full hearing at the hands of this honorable court. I think we are equally entitled to an early hearing to the end that a reversal may not prove to be a meaningless ceremony without substantial value to the plaintiff. The amount involved is very large; the damage already inflicted upon the plaintiff in error, should its title ultimately be recognized, is beyond repair; it will become absolute if this case is to remain undetermined until reached in the ordinary course of procedure.

We respectfully pray that an order will be made advancing and assigning it to a hearing upon a day certain to be named in the order; all of which is respectfully submitted.

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M. S. GUNN,
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Of Counsel.

[Endorsed:] No. 611. In the Supreme Court of the United States, October Term, A. D. 1913. Stewart Mining Company, a Corporation, Plaintiff in Error, *vs.* Ontario Mining Company, a Corporation; Stanley A. Easton and Myron A. Folsom, Defendants in Error. Cullen, Lee & Hindman, Featherstone & Fox, Gunn, Rasch & Hall, C. S. Thomas, Att'ys for Pl'ff in Error.

[22692]

FILED
FEB 10 1915
JAMES D. MAHER

SUPREME COURT OF THE UNITED STATES

October Term 1913.

No. [redacted] 205

STEWART MINING COMPANY,

Plaintiff in Error,

vs.

ONTARIO MINING COMPANY, STANLEY A. EASTON and MYRON A. FOLSOM,

Defendants in Error.

BRIEF FOR PLAINTIFF IN ERROR.

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SUPREME COURT OF THE UNITED STATES

October Term 1913.

No. 611

STEWART MINING COMPANY,

Plaintiff in Error,

vs.

ONTARIO MINING COMPANY, STANLEY A. EASTON and MYRON A. FOLSOM,

Defendants in Error.

BRIEF FOR PLAINTIFF IN ERROR.

STATEMENT OF THE CASE.

The Stewart Mining Company, plaintiff in error, is the owner and in possession of the Senator Stewart Fraction Quartz Lode Mining Claim. A short distance southerly from this claim is the Ontario Quartz Lode Mining Claim, the property of one Jonathan Bourne, Jr. (These claims will be referred to as the Stewart Fraction and the Ontario).

Both were patented prior to the commencement of this action. Within the Stewart Fraction claim is a vein which extends beneath the surface of the Ontario claim. The vein terminates in the Stewart Fraction claim along a large fault known as the Osborn fault. It is asserted in behalf of the Stewart Company that the termination of the vein along this fault is an apex, and that this apex is so situated with reference to the lines of the Stewart Fraction claim as to entitle the Stewart Company as the owner thereof to the ore bodies of the said vein throughout its downward course, including those here in controversy in the Ontario claim and which are situated westerly of a vertical plane drawn downward through the east end line of the Stewart Fraction claim extended. The defendant in error, the Ontario Company, prior to and at the time of the commencement of this action, was in possession of the Ontario claim as lessee and was engaged in extracting and removing ore from that part of the Stewart vein beneath the Ontario claim within the territory just described. It is admitted by defendants in error that the Ontario Company had extracted from the ore bodies in controversy ore in excess of forty thousand tons of the gross value of several hundred thousand dollars. The purpose of the action is to obtain a judgment for the ore extracted and an injunction to prevent further trespass.

The defendants in error deny that the termination and edge of the vein along the Osborn fault in the Stewart Fraction is an apex, and while it is admitted that the apex of the vein is not within the Ontario claim, they rely upon the presumption arising from the recitals of their patent that this vein and the ore bodies therein beneath the surface of the Ontario are the property of the owner of that claim.

The relative situation and boundaries of the claims are shown by the maps in evidence designated as "Plaintiff's Exhibit 1" and "Defendants' Exhibit B". The vein, its situation with reference to the respective claims and the termination thereof along the Osborn fault in the Stewart Fraction claim, are shown by the models in evidence as "Plaintiff's Exhibit 15" and "Defendants' Exhibit L", and also by the maps just referred to and the stope map, "Plaintiff's Exhibit 2". All of said maps and models are now lodged with the clerk of this honorable court.

A trial was had resulting in a judgment in favor of defendants in error. An appeal was taken to the Supreme Court of Idaho and the judgment of the trial court was affirmed.

There is no controversy over the material facts to be considered. The maps and models of the respective parties are in substantial accord. The testimony of the witnesses is not conflicting in any essential particular and consists principally of an

explanation of the maps and models. The Supreme Court of Idaho in its opinion refers to the findings of the trial court and says:

> "There seems to be really no serious contention as to the sufficiency of the evidence to support these findings, except as to the finding with reference to the apex of the vein within the Stewart Fraction and the apex of the ore bodies within the Ontario claim, in which the appellant claims the ownership, and that is more a difference of conclusion than of probative fact. That controversy here involved resolves itself more to a proper application of the rules of law governing extralateral rights to lode mining claims than to any serious conflict over the facts of the case." (Rec. p. 550).

It was decided by the Supreme Court of Idaho that the termination and edge of the vein along the Osborn fault in the Stewart Fraction claim, is not an apex to the section of the vein beneath the Ontario claim in controversy. In arriving at this conclusion the court construed the words "downward course" and "course downward" in section 2322 of the Revised Statutes of the United States as having reference to a course more on the dip than along the strike of a vein. The court in the opinion said:

> "So far as we are aware, the authorities are quite uniform in holding that the extralateral

right awarded by the statute (section 2322) must in all cases be pursued more upon the dip than the strike of the vein—more upon the *downward* than upon the *onward* course of the vein. To pursue a vein in the direction of its strike at an angle of less than 45 degrees to the course thereof would clearly not be following the vein on its "downward course," as authorized by the statute."

Questions for Decision.

Whether the edge or termination of the vein along the Osborn fault is a "top" or "apex" within the meaning of those terms as used in section 2322 of the Revised Statutes of the United States, and whether the words "course downward" and "downward course" in said section have reference to a course more on the dip than along the strike of the vein, are the questions presented for consideration and decision by this court.

SPECIFICATION OF ERRORS.

1. The Supreme Court of Idaho erred in holding and deciding that in the exercise of the extralateral right provided for in, and conferred by, section 2322 of the Revised Statutes of the United States a vein cannot be followed more along the strike than on the dip thereof.

2. The court erred in deciding that the words "downward course" as used in section 2322 of the Revised Statutes of the United States have reference to a course at an angle of 45° or more to the strike of the vein.

3. The court erred in deciding that the course pursued in following the vein in controversy from the termination, end or edge thereof, along the Osborn fault beneath the surface of the Senator Stewart Fraction claim to the part of the vein or ore bodies therein contained, beneath the Ontario claim, between vertical planes drawn downward through the end lines of the Senator Stewart Fraction claim extended in their own direction indefinitely, along vertical planes parallel with the vertical planes of said end lines extended, as aforesaid, is not a downward course.

4. The court erred in deciding that the termination, edge or end of the vein in controversy in said cause against or along the Osborn fault beneath the surface of the Senator Stewart Fraction claim

is not a top or apex thereof within the meaning of the words "top or apex" as used in section 2322 of the Revised Statutes of the United States.

5. The court erred in deciding that the appellant has no extralateral right to the vein and ore bodies therein beneath the Ontario Quartz Lode Mining claim between vertical planes drawn downward through the end lines of the Senator Stewart Fraction claim extended indefintely.

6. The court erred in deciding that the appellant is not the owner of the vein and the ore bodies therein contained beneath the Ontario Quartz Lode Mining claim between vertical planes drawn downward through the end lines of the Senator Stewart Fraction claim extended in their own direction indefinitely.

ARGUMENT AND AUTHORITIES.

Construction of Section 2322 of the Revised Statutes of the United States.

A decision of the questions presented requires a construction of section 2322 of the Revised Statutes of the United States. This section provides:

> "The locators of all mining locations heretofore made or which shall hereafter be made, on any mineral vein, lode, or ledge, situated on the public domain, their heirs and assigns, when no adverse claim exists on the tenth day of May, eighteen hundred and seventy-two, so long as they comply with the laws of the United States, and with state, territorial, and local regulations not in conflict with the laws of the United States governing their possessory title, shall have the exclusive right of possession and enjoyment of all the surface included within the lines of their locations, and of all veins, lodes, and ledges throughout their entire depth, the top or apex of which lies inside of such surface lines extended downward vertically, although such veins, lodes or ledges, may so far depart from a perpendicular in their course downward as to extend outside the vertical side-lines of such surface locations. But their right of possession to such outside parts of such veins or ledges shall be confined to such portions thereof as lie between vertical planes drawn downward as above described, through

the end-lines of their locations, so continued in their own direction that such planes will intersect such exterior parts of such veins or ledges. And nothing in this section shall authorize the locator or possessor of a vein or lode which extends in its downward course beyond the vertical lines of his claim to enter upon the surface of a claim owned or possessed by another."

Meaning of Words "Downward Course" and "Course Downward."

In the opinion of the Supreme Court of Idaho it is said:

"Some confusion has obtruded into this case through an attempt to extend the language of the courts in Bunker Hill & Sullivan M. & C. Co. v. Empire State, etc., Co., (C. C.), 134 Fed. 268, and Last Chance Mining Co. v. Bunker Hill & Sullivan M. & C. Co., 131 Fed. 579, 66 C. C. A. 299, to an unwarranted length. The suggestion contained in those cases that it makes no difference whether the vein be followed more on the dip than the strike, provided it be 'between vertical planes drawn downward through its adjudicated end lines,' is not the vital holding or ruling of the court in either case, and, as we understand the decisions of the Supreme Court, does not find unqualified support in any of the decisions of that court. The Supreme Court always qualifies its holdings in this respect by the condition of the statute that

> the course between those vertical planes must be downward. So far as we are aware, the authorities are quite uniform in holding that the extralateral right awarded by the statute (section 2322) must in all cases be pursued more upon the dip than the strike of the vein—more upon the downward than upon the onward course of the vein. To pursue a vein in the direction of its strike at an angle of less than 45 degrees to the course thereof would clearly not be following the vein on its 'downward course,' as authorized by the statute." (Rec. p. 553).

After the decision by the Supreme Court of Idaho in this case Mr. Lindley's third edition of his work on Mines and Mining was published. On page 730 of volume 1 he quotes that part of the opinion in which it is decided that the words "downward course" have reference to a course more on the dip than along the strike, and says:

> "We know of no legal principle to support this latter deduction, that an extralateral right cannot be exercised where the angle the extralateral planes form with the line of strike of the vein is less than forty-five degrees. The adoption of an arbitrary angle beyond which such rights may not be exercised is hardly within the province of the courts.
>
> "In a subsequent section we have pointed out that the locator may place his end-lines at an angle so long as they cross the apex of the vein." (Lindley on Mines, 3rd ed. p. 730).

In the case of Bunker Hill & Sullivan Mining Co. v. Empire State etc., Mining Co., 108 Fed. 189, District Judge Beattie considered the extralateral right of the Stemwinder claim. A map, showing the situation of the Stemwinder with reference to the adjacent claims and showing the course of the apex of the vein involved, is presented in 131 Federal Reporter at page 592. An examination of this map will disclose that the vein was in such form and so situated that in following the same from the apex in the Stemwinder within the vertical planes of the end lines of said claim extended, the course pursued was more along the strike than on the dip after reaching a certain depth. In the opinion District Judge Beattie said:

> "Defendants claim that the planes of the Stemwinder's end lines run more along the course than upon the dip of the ledge, and refer to the fact that this court once instructed a jury that this could not be done. Such instruction was given in the hurry of a jury trial, perhaps without sufficient reflection, and the court may also have been somewhat biased by the still lingering view always entertained by the miner that ledges were to be followed upon their dip; but I think the instruction was not in accord with the rule of the Supreme Court, which is simply that ledges are to be followed between end line planes without any limitation prescribed as to dip or course. Following the logic

of that rule, I have not examined the evidence bearing upon the relation of the Stemwinder's end lines to the course or dip of the ledge."

In a later case between the same parties, 134 Fed. 268, District Judge Beattie again, in considering the extralateral right of the Stemwinder claim, said:

"Whether the evidence sustains defendant's contention that complainant, in following the ledge between the planes of its end lines, does so more upon its strike than upon its dip, I have not determined. There is nothing in the mining act that can possibly justify the conclusion that this extralateral right must be limited to 45 degrees, or to any other particular variation, from the true dip. All that this court can do is to follow the rule, as it understands it, adopted by the Supreme Court. That court holds without any qualification that the extralateral right is bounded by the prolonged planes of the legal end lines. I do not desire to add to what I have said in other cases in justification of my adoption of this rule."

In the case of the Last Chance Mining Company v. Bunker Hill & Sullivan Mining Company, 131 Fed. 579, the court said:

"It is further and strenuously urged on behalf of the appellants that the appellee, in following the vein underground between vertical planes drawn downward through its adjudicated end lines, does so more upon its strike than upon its

dip; and this, it is insisted, is not permissible under the law. In respect to this matter the master made no findings, holding it immaterial, as did the court below, and confining his finding in that regard to the fact that the course of the vein was downward between the end line planes fixed by him. *The extralateral right to a vein or lode out-cropping at the surface, where it exists, is fixed by the course of the vein or lode at the surface, and not by its course on a level.*" (Italics ours.)

The court then quotes extensively from the case of Mining Co. v. Tarbet, 98 U. S. 463, and the case of Iron Silver Mining Co. v. Elgin Min. Co., 118 U. S. 196, and concludes the opinion as follows:

"While the statute requires parallelism of the end lines, and the courts have held that they may not be laid so divergent as to include more in length upon the dip of the vein than is allowed in length upon the surface, neither the statute nor any decision to which our attention has been called defines any particular angle at which the end lines shall cross the general course of the vein in order that the extralateral right given by the statute may exist. And as said by the Supreme Court in the case last cited, where more than one vein apexes within the surface lines, it would be a physical impossibility for the end lines to be drawn at a right angle to the courses of all such veins. *And that the extralateral right conferred by the*

statute may and does exist without regard to the angle at which the end lines cross the general course of the vein has been held both by the Supreme Court and by this court. Last Chance Min. Co. v. Tyler Min. Co., 157 U. S. 683; 15 Sup. Ct. 733, 39 L. Ed. 859; Empire State-Idaho M. & D. Co. v. Bunker Hill & Sullivan M. & C. Co., 114 Fed. 417, 52 C. C. A. 219, in which last-named case this court awarded the appellant Empire State-Idaho Mining & Development Company the right to follow the vein outcropping within the surface boundaries of its San Carlos location between planes drawn down through its end lines at almost, if not quite, as much an angle to the general course of the outcrop of the vein within its surface boundaries as is the angle at which the appellee herein was permitted by the court below to pursue the segment of the vein here in question." (Italics ours.)

An application was made to this Court for a writ of certiorari in the case of Last Chance Mining Co. v. Bunker Hill & S. Co., 131 Fed. 579, and the application was denied. (200 U. S. 617.)

This Court, in the case of Mining Company v. Tarbet, 98 U. S. 463, cited by the Circuit Court of Appeals in the opinion in the case of the Last Chance Mining Co. v. Bunker Hill & Sullivan Mining Co., 131 Fed. 579, did decide that where a mining claim is located along the course of the apex the extralateral right attaches, notwithstanding sub-

sequent development may disclose that the course of the apex does not correspond with the strike of the vein, and in so deciding in effect declared that it is immaterial whether in following the vein downward between the vertical planes of the end lines extended the course pursued is more along the strike than on the dip.

The only case to our knowledge in which it was decided that it is not permissible to follow a vein more along the strike than on the dip in the exercise of the extralateral right is the case of Duggan v. Davey, 4 Dak. 110, cited by the Idaho court in support of its holding that the termination of the vein along the Osborn fault is not an apex. The opinion in the case of Duggan v. Davey discloses that the decision is founded upon the erroneous assumption that the end lines of the claim must be laid substantially at right angles to the strike of the vein.

Without further discussion we submit that the decision of the Supreme Court of Idaho with reference to the meaning of the words "downward course" is erroneous and that it is wholly immaterial what course is pursued with reference to the strike of the vein in the exercise of the extralateral right if the course is actually downward or below the angle of the horizon.

The words "downward course" do not require any definition as they define themselves. "Down-

ward course," as used in the Act of Congress, means a course which will take one from a higher to a lower elevation.

Mr. Lindley, in the 3rd edition of his work on Mines, at page 727, says:

> "The Act of May 10, 1872, however, gave controlling force to surface lines, through which it was contemplated extralateral bounding-planes were to be drawn. As we have heretofore observed, none of the words, 'dips, spurs, angles, variations' used in the former act were retained in the later legislation. The words 'downward course' were substituted, as, under the new system, end-lines were not required to cross the apex of the lode at any particular angle."
>
> "The rectangular, or true dip, theory was therefore not applicable."
>
> "The term 'downward course,' a more flexible term, may therefore have been advisedly used in the new law to apply to a course from a higher to a lower level in the plane of the vein following downward along the intersecting vertical end-line plane, which only in extremely rare instances would be coincident with the true dip-line."

He further says on page 1345:

> "We have heretofore discussed the meaning of 'downward course' used in the statute, and reached the conclusion that it means downward from a higher to a lower level in the plane of

> the vein along the intersecting end-line or side-end-line plane."

The construction of the words "downward course" by Mr. Lindley is the only reasonable construction. There is no more justification for saying that the downward course must be a certain number of degrees from the horizontal, than there is for saying that such course must form a certain angle with the strike of the vein.

In the opinion of the Idaho court it is said:

> "The maps and models introduced all tend to support the contention that any pursuit of this vein by appellant beyond the south side line of the Stewart Fraction along a line parallel to the vertical plane of its east end line would be about horizontal rather than downward."

As the cross-section maps and the models, all of which are conceded to be correct, show that the course pursued in following the vein from the southerly side line of the Stewart Fraction claim to the ore bodies in controversy along the line mentioned in the opinion, constantly departs from the horizontal downward, it would seem that the court entertained the idea that the words "downward course" have reference to some arbitrary angle from the horizontal, as well as to some arbitrary angle from the strike of the vein.

In Iron Silver Mining Company vs. Murphy, 1 Morrison Mining Reports 552, Judge Hallett said:

> "It used to be contended here in this Court and in the Courts of the State that they could not hold the vein if it declined in only a small degree from the plane of the horizon; they said that the law should be applied to veins which are more vertical in their course, but have heard nothing of that in this case. That point was decided against that view whenever it was made."

In Stevens v. Williams, 1 Morrison Mining Reports 571, Justice Miller said, in charging the jury:

> "If there is any departure from a horizontal elevation in a downward course, it is sufficient."

The statement of the Idaho Court that in following the vein "beyond the south side line of the Stewart Fraction along a line parallel to the vertical plane of its east end line would be about horizontal rather than downward," carries with it an admission that from the edge of the vein along the parallel line mentioned to the south side line the course is downward. But however this may be, the cross-section maps and models show that in following the vein along such parallel line from the edge along the Osborn fault to the south side line of the claim the course pursued is a downward course, and

this is conceded by defendants in error. It is also an admitted fact in the case that in following the vein from the edge along the Osborn fault to the section of the vein and ore bodies beneath the Ontario claim in controversy along any plane parallel with the vertical plane of the east end lines of the claim extended, the course pursued is from a higher to a lower elevation. In view of these conditions, it is wholly immaterial that the vein beyond the south side line of the Stewart Fraction claim changes in dip and strike, by reason of which, in following the vein along such a parallel plane south of such side line the course pursued approaches nearer the horizontal than the course pursued along such line within the Stewart Fraction claim. As said by Mr. Lindley in his work on Mines and Mining, 3d ed. p. 1015, downward course "means downward from a higher to a lower level in the plane of the vein along the intersecting end-line or side line plane."

This court in the case of Mining Company v. Tarbet, 98 U. S. 463, decided that the rights of a locator of a mining claim are determined by the relation of the apex to the surface boundaries and that the change in the dip or strike of the vein below the apex does not affect the validity of the location or the rights of the locator.

As it is admitted that in following the vein from the edge or termination in the Stewart Fraction

claim to the ore bodies in controversy along vertical planes parallel with the vertical plane of the east end line of the Stewart Fraction claim extended, the course pursued southerly of the south side line of the Stewart Fraction claim is more along the strike than on the dip of the vein, the decision of the Idaho court that such termination or edge is not an apex followed logically from the holding that the words "downward course" have reference to a course which must be more upon the dip than along the strike of the vein.

Meaning of "Top or Apex."

Mr. Lindley quotes the definition of apex given by Mr. Ross E. Brown, as follows:

> "The apex is all that portion of the terminal edge of the vein from which the vein has extension downward in the direction of its dip." (Lindley on Mines, 3rd ed. p. 688.)

Mr. Lindley, in speaking of this definition, says:

> *"The above definition, which accords with our views, involves the elements of terminal edge, and downward course therefrom."* (3rd ed. p. 688.) (Italics ours.)

If we accept Mr. Lindley's construction of the words "downward course" as used in section 2322 of the Revised Statutes of the United States, which is undoubtedly correct, and further accept his view of the meaning of the term "apex," which we think

is equally so, we are forced to the conclusion that the terminal edge of the vein along the Osborn fault is an apex of the section of the vein in controversy beneath the Ontario claim within the meaning of the Federal Statute.

The purpose in requiring a downward course to be followed in the exercise of the extralateral right is to prevent a locator from following the vein to an apex in another claim or to an apex beyond the boundaries of his claim. If the locator is permitted to follow from the terminal edge of the vein on a downward course only, he never can encounter another terminal edge of the same vein with a downward course therefrom, and effect is given to the intent of Congress that the entire vein may be acquired by locations embracing its terminal edge.

It is claimed in behalf of the defendants in error that the edge or end of the vein along the Osborn fault is the side or bottom edge and not the top edge. To sustain this contention, the case of Duggan v. Davey, 4 Dak. 110, 26 N. W. 887, was cited and relied upon and is referred to approvingly by the Idaho court. This case is explained and the facts illustrated by Mr. Lindley at pages 689, et seq., of his work on Mines, third edition. In that case the Sitting Bull claim had been located along the northern slope of a hill. From the end or edge of the vein in the Sitting Bull claim the vein had a downward course southerly of approximately three de-

grees. The court found the strike to be north and south and the dip east at an angle of seven and a half to eight degrees, as shown in figure 17 of Lindley on Mines, 3rd ed., at page 692. Mr. Lindley says:

> "This dip-line shows that the outcrop in the Sitting Bull location is *substantially* on the side edge of the vein not forming an apex. To be sure, a small part of the outcrop at the westerly end of the location is apex, according to our definition, but this is not the controlling part involved in the case." (Lindley on Mines, 3rd ed. p. 693.)

Mr. Lindley presents a diagram on page 701 of his work by which he illustrates that a part of the edge of the vein in the Sitting Bull location constituted an apex.

According to the rule recognized by Mr. Lindley for determining the question of apex, whenever the strike of the vein forms an angle with the end or edge of the vein above the strike line of less than ninety degrees, such edge or end constitutes a top or apex.

The case of Duggan v. Davey was decided in 1886, or more than a quarter of a century ago. Since then it has been authoritatively determined that the extralateral right attaches, although in following the vein downward within the planes of the end lines of a claim one does so more along the strike than upon the dip.

In the opinion in the case of Duggan v. Davey the court said:

> "I think it clear that the law intended these lines (the end lines) to be laid substantially at right angles to the general course or strike of the vein, since in no other way could the locator be limited to a given length along the ledge.
>
> "This seems to have been the view taken of the law by the three learned judges who sat in the Richmond-Eureka case. It is true that they hold that the provisions of the law of 1872 requiring parallel end lines may be regarded as merely directory, so that a failure to so lay them would not invalidate the location; but I think the whole force of the observations of the court upon this point lies in their assumption that it makes no difference how the miner may choose to locate his end lines, *since the law limits his right to that section of the lode or ledge carved out by vertical planes drawn through the extreme points or ends of his line of location at right angles with a line representing the general course or strike of the lode.*" (Italics ours.)

A study of the opinion in Duggan v. Davey shows that the controlling thought in the minds of the judges was that the vein cannot be followed in the exercise of the extralateral right except at a right angle to the strike of the vein, and that it was because of this view the court decided that the edge of the vein in question in that case was not an apex.

If the law requires the end lines to be placed at right angles to the general course or strike of the vein and where this is not done the extralateral right is controlled by imaginary end lines forming right angles with the general course or strike of the vein, as held by the court in the Duggan-Davey case, there can be but one apex to any section of a vein and such apex is that part of the terminal edge of the vein from which the course is downward along the true dip line. The view that the extralateral right can only be exercised along the true dip line, or between vertical planes at right angles to the general course or strike of the vein, makes impossible such a situation as is presented in the cases involving the Bunker Hill vein, as there cannot be any conflict of extralateral rights if the true dip line theory is accepted. We, therefore, submit that the Duggan-Davey case is contrary to the decision in the Last Chance-Bunker Hill case, 131 Fed. 579, and is at variance with the law as recognized by this Court in the opinion in the case of Last Chance Mining Co. v. Tyler Mining Co., 157 U. S. 683, from which we quote as follows:

> "For, while the disputed ore is on the dip of the vein within the extended vertical planes of the end lines of the Tyler claim, it is also within the legal end lines of the Last Chance claim, and on the dip of the vein as it passes through that claim. Naturally, therefore, the contro-

versy in the circuit court was upon the priority of location."

It is apparent that the court in the quotation above made used the word "dip" as synonymous with "downward course".

Mr. Lindley says:

> *"The land officers have no right to require that an end-line shall make a right angle, or any other particular angle, with the general direction of the vein. It is the locator's privilege to give such direction to his end-lines as he pleases, so long as they are across the apex of the vein, are parallel to each other, and the length of the lode measured between them, on direct line between the extreme points on the vein within the location, does not exceed the statutory limit of fifteen hundred feet."* (Lindley on Mines, 3d ed. p. 860). (Italics ours.)

As we have shown in discussing the Duggan-Davey case, the meaning attributed to the words "downward course" necessarily determines whether or not a terminal edge is an apex. If downward course means a course forming an angle of not to exceed forty-five degrees with the true dip line, then the apex, while not limited to the particular part of a terminal edge within vertical planes forming right angles to the general course or strike of the vein, as held by the South Dakota Court, is, nevertheless, limited to that part of the terminal

edge which may be included within vertical planes forming angles with the true dip line of not exceeding forty-five degrees. On the other hand, if the words downward course have reference to a course from a higher to a lower level without regard to the angle such course forms with the strike or dip of the vein, then the only essentials to an apex are terminal edge and downward course therefrom, as said by Mr. Lindley, and the apex may be that part of the terminal edge which would not be an apex according to the decisions of either the South Dakota or Idaho courts.

In the opinion of the lower court it is said:

> "The definitions of the word 'apex' as used in the statute (Sec. 2322 U. S. Rev. Stats.) all reach the one inevitable conclusion that it is the highest point in the vein. (Citing cases.) But this is only a general definition, and its application to any particular vein or peculiar location may and often will call for further particularity of description. It must be the top or terminal edge of the vein on the surface or the nearest point to the surface, and it must be the top of the vein proper rather than of a spur or feeder, just as the highest point in the roof of a house would be taken to be the apex of the house, and not the chimney or flagstaff. Again, an apex is a point from which the vein has a dip as well as strike or course; else it confers no extralateral right." (Rec. p. 553).

Mr. Justice Brewer in the opinion in the case of Larkin v. Upton, 144 U. S. 19, says:

> "The apex of a vein is not necessarily a point, but often a line of great length."

Mr. Lindley, in discussing the definition of apex, says:

> "How should this apex be defined? It is evidently a surface, bounded by the walls of the vein. It has both length and breadth, and cannot be described as a point or a line.
>
> "The apex of the ideal vein within the location is a surface bounded by the walls of the vein and the end-lines of the location. This surface is, of course, irregular. It may be higher at one place within the boundaries than it is in another; but mere elevation of the upper edge of the vein at different points within the location is of no moment. If the top of the mountain were ground down to a horizontal plane, the vein as exposed would be a plane surface; but, nevertheless, it would be an apex. The fact that the exposed edge of the vein is ragged, or that the surface of the outcrop is higher in one place above a given datum plane than it is in another, makes no difference in the principle.
>
> "If this upper edge does not outcrop so as to be visibly traceable on the surface, but is 'blind,' covered with detritus or a capping of country rock, it is still a surface bounded by the walls of the vein and vertical planes drawn

downward through the end-lines. The plane of contact of the upper edge of the vein with the detritus or capping, intersected by the walls of the vein, would be the apex surface. We cannot conceive that an apex of a lode, within the meaning of the act of congress, can be anything but a surface, although we are aware that the supreme court of the United States has said that an apex is often a *line* of great length. But it undoubtedly meant a surface, because in another portion of the same case it speaks of the 'apex in its full width.' Mathematically speaking, there is no width to a line. As was said by the supreme court of Montana, a lead, or lode, is not an imaginary line without dimensions; it is not a thing without shape or form. But before it can legally and rightfully be denominated a lead, or lode, it must have length, and width, and depth; it must be capable of measurement; it must occupy defined space, and be capable of identification. Of course, in speaking of the edge of the vein nearest to the surface, we mean the surface along the course of the vein, the upper edge, and not the lower edge, or side edge. As absolute horizontality does not exist in nature, every vein, lode, or deposit, whatever its form, has either an upper and lower edge, or a top and a bottom, as well as sides. It may be difficult to find them, or to determine their relative position, but they exist, in the nature of things." (Lindley on Mines, 3rd ed. pp. 684 to 686.)

The words "top or apex" in section 2322 U. S. Rev. Stats. are used relatively and with reference to a located mining claim and the terminal edge of the vein within such claim. The apex, which will confer an extralateral right, is a terminal edge from which the vein has a course downward or can be followed from a higher to a lower level, along the extralateral right planes which are vertical planes parallel with the vertical planes of the end lines of the claim extended. It is wholly immaterial what angle the extralateral right planes form with the strike of the vein if the course along such planes is downward.

As the Idaho court decided that in the exercise of the extralateral right one cannot pursue a vein at an angle of less than 45 degrees with the strike, it, of course, follows that in applying the definition of an apex as the highest point in the vein, the Idaho court regarded as apex only that part of the terminal edge from which the vein can be followed to the ore bodies in controversy along a line or course forming an angle of not less than 45 degrees with the strike, and consequently decided that the terminal edge along the Osborn fault is not an apex.

One can readily imagine a vein having an edge from which you can go upward from the edge in one direction and downward from the same point in the edge in another direction. Such edge is the top or apex of the section of the vein from which the

course from the edge is downward and the side edge of that part of the vein from which the course is on a level and the bottom edge of that part of the vein from which the course is upward. So that, in determining whether an edge is an apex the edge should and must be considered with reference to the section of the vein embraced within the vertical planes of the end lines of the claim extended and with reference to the course pursued in following the vein from such edge along the extralateral right planes which are fixed by the direction of the end lines.

The lines of a location may be so placed that the terminal edge of the vein between the end lines is the apex to one section of the vein and the lines may be changed so as to make the same terminal edge the apex to an entirely different section of the vein. Again, there may be different locations along a terminal edge of a vein, the lines of which are so situated that the terminal edge within each location will constitute an apex to the same section of the vein. This is illustrated by figure 98 on page 1441, Lindley on Mines, 3d ed.

As it is permissible to place the end lines of a location across the terminal edge of a vein at any angle and as the extralateral right attaches only to the section of the vein between the vertical planes of the end lines of the claim extended, it necessarily follows that when an extralateral right is asserted

the right must be determined with reference to the location of the claim and the relation of the lines thereof to the apex or terminal edge within the claim, and to the section of the vein to which the right is asserted.

The maps and models show a pronounced downward course on the vein from the terminal edge along the Osborn fault to the southerly boundary of the Stewart Fraction claim. The Supreme Court of Idaho does not find otherwise but says that any pursuit of the vein "beyond the south side line of the Stewart Fraction along a line parallel to the vertical plane of the east end line would be about horizontal rather than downward." (Rec. p. 556.) Mr. Hershey, one of the principal witnesses for the defendants in error, testified that the terminal edge along the fault is a top edge to a section of the vein extending southerly from the fault a distance of 200 feet. His testimony is as follows:

> "Q. Well, take a section here 200 feet from your line of cutoff and as to that section of the vein would this line of cutoff be a top edge?
>
> "A. If you cut that section of the vein away and do not consider it at all in connection with the remainder of the vein, and if you define it as a vein, that edge would be a top edge.
>
> "Q. And in your statement that this is a side edge you take into consideration the entire course of this vein as shown through all of these workings?

"A. I do." (Rec. p. 496.)

If such an edge is an apex to a section of the vein extending two hundred feet from the Osborn fault, a valid location could be made thereon. An apex which will support a location is also an apex to which the extralateral right attaches. In other words, an apex for one purpose is an apex for all purposes and once an apex always an apex. You cannot destroy an apex by exploration and development of the vein.

According to the decision of the lower court to the effect that one cannot in the exercise of an extralateral right follow a vein more along the strike than on the dip, and that the extralateral right asserted in this case does not exist because in following the vein along the extralateral right planes southerly of the Stewart Fraction claim the course pursued is more along the strike than on the dip, it follows either that there may be an apex sufficient to support a location to which the extralateral right does not attach, or that which may appear to be a top edge or an apex when the vein is developed to a depth of two hundred feet may prove not to be an apex when developed beyond that depth.

Section 2322 of the Revised Statutes of the United States provides that "The locators of all mining locations heretofore made or which shall hereafter be made, on any mineral vein, lode, or ledge, * * * shall have the exclusive right of posses-

sion and enjoyment of all the surface included within the lines of their locations, and of all veins, lodes, and ledges throughout their entire depth, the top or apex of which lies inside of such surface lines extended downward vertically," etc. In view of this language, it is impossible to have an apex which will support a location to which the extralateral right does not attach.

In the Flagstaff case, 98 U. S. 463, this Court said:

> "Perhaps the law is not so perfect in this regard as it might be; perhaps the true course of a vein should correspond with its strike, or the line of a level run through it; but this can rarely be ascertained until considerable work has been done, and after claims and locations have become fixed. The most practicable rule is to regard the course of the vein as that which is indicated by surface outcrop, or surface explorations and workings. It is on this line that claims will naturally be laid, whatever be the character of the surface, whether level or inclined."

Where the strike of a vein forms an angle with the terminal edge of the vein above the strike line of less than ninety degrees, such edge is a top edge. This proposition seems to be accepted as correct by Mr. Lindley in his work on Mines in considering the question of apex involved in the Duggan-Davey case. (Lindley on Mines, 3rd ed. p. 701.)

Another test for determining the question of apex is to determine whether the course pursued on a line at a right angle to the course of the terminal edge is downward, upward or on a level. If such course is downward the edge is a top edge. If it is on a level it is a side edge and if it is upward it is a bottom edge. An apex found to exist by the application of these tests accords with Mr. Lindley's definition of apex. Applying the tests to the vein as shown by the maps and models and as established by the uncontradicted testimony of the witnesses for plaintiff in error, proves the terminal edge along the Osborn fault an apex.

It is conceded that the vein terminates along the Osborn fault, as shown by the exhibits. The fact that there is a downward course from such terminal edge to the section of the vein and ore bodies beneath the Ontario claim, along vertical planes parallel with the vertical planes of the end line of the Stewart Fraction claim extended, is not contradicted. We find, therefore, that the two elements essential to an apex, according to the definition of apex accepted by Mr. Lindley as correct, exist, namely, "terminal edge and downward course therefrom."

* * * * *

The fact that the vein on its downward course from the apex in the northerly portion of the Senator Stewart Fraction claim extends into and

through the Stewart and Lazy Jean claims does not affect the extralateral right attaching to the vein beyond and southerly of the Senator Stewart and Lazy Jean claims.

Empire State etc. Co. v. Bunker Hill & S. Min. Co., 114 Fed. 417.

* * * * *

The apex of the vein along the Osborn fault is a subsurface apex. Such an apex will support a location and the extralateral right attaches to a vein having a subsurface apex the same as to a vein which outcrops at the surface.

Mining Co. v. Tarbet, 98 U. S. 469;

Calhoun Gold Min. Co. v. Ajax Gold Min. Co., 182 U. S. 497.

In the opinion in the last case cited the court said:

> "The only condition is that the vein shall apex within the surface lines. It is not competent for us to add any other condition. Blind veins are not excepted, and we cannot except them. They are included in the description 'all veins' and belong to the surface location."

The fact that the northerly and southerly termination or edge of the vein is an apex and that the lines of a claim might have been so laid with reference to such apex as to have conferred upon the

locator an extralateral right to the ore bodies and section of the vein beneath the Ontario, does not, to any extent, militate against the view that the edge of the vein, extending easterly and westerly through the Stewart Fraction claim along the Osborn fault is an apex to the same section of the vein, as there may be two or more apices to a part of the same vein. This is illustrated by figure 30 on page 728 of Lindley on Mines, 3rd ed., which represents in isometric projection several conflicting locations of the Bunker Hill vein.

Decision of Circuit Court of Appeals for Ninth Circuit in the Case of Stewart Mining Company v. Jonathan Bourne, Jr., Et Al.

The plaintiff in error instituted a suit in the United States District Court for the District of Idaho against Jonathan Bourne, Jr., and wife as owners of the Ontario claim for the purpose of quieting the title of the plaintiff in error to the section of the vein within the Ontario claim in controversy in this case. The cause was submitted for decision upon the testimony and exhibits in this case. The District Court of Idaho decided that the edge or termination of the vein in the Stewart Fraction claim along the Osborn fault is not an apex and dismissed the bill. An appeal was taken to the Circuit Court of Appeals for the Ninth Circuit and that court recently affirmed the decision of the District Court. The Circuit Court of Appeals in the opinion says:

> "But the large model introduced in evidence by the defendants on the trial, the correctness of which was not only not questioned at the argument by counsel on either side, but is practically conceded, and which model shows the situation of the vein by actual development, thereby amounting to a demonstration, makes plain, we think, that this vein was not turned or bent in its course or strike at the point of its contact with the Osborn fault, and did not and

does not extend from that point along that fault, but, on the contrary, came to an abrupt end there. True, further to the northeasterly and at a much greater depth the ore is shown by the model to have extended to the Osborn fault, and from that point to have followed the fault northeasterly to and out of the easterly end line of the claim. But we think it manifest that such portion of the ore body cannot in any proper sense be regarded as any part of the apex of the vein. In its course upward from the bowels of the earth the ore evidently made its way through the openings to that part of the Osborn fault last referred to, and on upward through the comparatively narrow space forming the only connection with that portion of the vein within the boundaries of the Senator Stewart Fraction claim that extends from the point of its entry therein at the southerly boundary of the claim to its contact with the Osborn fault, near the northerly side line of the claim. That portion of the vein, as has been said, underlies the Clancy fault. It is shown to be practically level, and is clearly shown by the evidence, and is practically conceded by counsel on both sides, to be a part of the apex of the vein in question. We think it is very clearly shown by the model referred to to be its only apex within the boundaries of the Senator Stewart Fraction claim."

It will be noted that the court in deciding that the edge or termination of the vein along the Osborn

fault is not an apex, considered the geological causes which resulted in placing the vein in the situation in which it is found in its relation to the Osborn fault. The court says, "that this vein was not turned or bent in its course or strike at the point of its contact with the Osborn fault, * * * but on the contrary, came to an abrupt end there." The court further assumes that the vein was formed after the faulting had occurred.

We submit that these considerations are wholly immaterial. The law was made to apply to existing conditions without reference to the cause or phenomenon which produced those conditions. Whether the vein was bent and whether it was created prior or subsequent to the existence of the Osborn fault can make no difference in the application of the law.

Let us assume that the vein instead of terminating along the southern edge of this great fault had been eroded by age, long action of streams, and surface waters, and that in place of the fault the mountain had been worn down by these and other influences, so that the terminal edge of the vein, although precisely as it is at present, outcropped at the sureface of a waterway or gulch running eastward and down the mountain. Let us further suppose this terminal edge thus outcropping to have been discovered and located as the Stewart Fraction claim and the vein followed from the surface

downward into and underneath the Ontario claim, within the Stewart Fraction end lines extended in their own direction. Would not the location have been made in strict accord with the mining statutes, and be given all the rights, both vertical and extra-lateral, flowing from such compliance? We can reach no other conclusion when the statute and the various decisions upon the subject, each of them arising from divergent facts and circumstances, are considered. And if this is so, it should be equally true of the facts disclosed by the record. For the agencies producing the conditions cannot be material. It is the conditions themselves and these alone which must determine the law, and through the law, the rights of the parties. Were it not so the statute would be either operative or ineffective, not because of existing facts, but because of the agencies influencing or producing them. We shall assume that there is no need here of argument to support this contention.

As a matter of fact, the witnesses for the defendant in error admitted that the vein bends or turns in the vicinity of the Osborn fault. Mr. Wiley, a witness for defendants in error, who superintended the construction of the large model and explained the same, said, in speaking of the strike of the vein:

> "These courses show that there is considerable uniformity in the strike of this vein, when

you treat it broadly throughout the whole, but as we approach the Osborn fault on all of these levels there is a perceptible bending. Whether this bending is caused by the fault or was there before, I do not know, but there is an unusual condition, an abnormal condition as regards the strike of the vein at that point. This is simply a local condition and extends for a comparatively short distance south of the plane of the interception of the vein by that fault." (Rec. p. 336.)

Furthermore, the maps and model of the defendants in error, as well as the maps and model of the plaintiff in error, show a curvature or bending of the vein as it approaches the Osborn fault and for a considerable distance southward.

The opinion of the Circuit Court of Appeals does not disclose the views of that court with reference to the meaning attributed to the words "downward course" and the words "top or apex," as used in section 2322 of the Revised Statutes of the United States, except as the inference may be drawn from the conclusion reached that the court did not accept the construction of said section which we are contending for before this court and contended for before that court.

With due respect to the Circuit Court of Appeals, we respectfully submit that the opinion is of little value in the consideration and decision of the questions presented to this court.

TESTIMONY AND EXHIBITS.

Plaintiff's exhibit 1 shows the boundaries of the Senator Stewart Fraction claim, the Ontario claim and other claims adjacent to the Stewart Fraction and Ontario, and also the workings and openings beneath these claims on the Stewart vein, with the exception of the stopes. The map is explained and verified by the witness Clancy, a mining engineer by profession. (Rec. pp. 37 et seq.)

Defendants' exhibit B was made by the witness Callaway, a mining engineer, and is explained by him. (Rec. pp. 312 and 313.) This map is a similar map to plaintiff's exhibit 1. Mr. Callaway, a witness for defendants, testified that he compared exhibit B with exhibit 1 and that while exhibit 1 is made on a scale of thirty feet to the inch, the two maps are substantially in accord and that there is "no particular point of discrepancy." (Rec. p. 313.)

Plaintiff's exhibit 2, referred to as the stope map, shows the location of the stopes and the extent of the stoping in the Stewart vein beneath the Stewart Fraction, the Senator Stewart, Switchback, Lazy Jean and Ontario claims. This map is also explained by the witness Clancy. (Rec. pp. 73 et seq.)

The map designated as plaintiff's exhibit 3 and referred to as the apex map, shows the alleged apex

of the vein with reference to the boundaries of the Stewart Fraction claim. (Rec. pp. 74-76.)

Plaintiff's exhibits 4, 5, 6, 7, 8 and 9 present cross-sections of the vein and are designated as sections I, II, III, IV, V and VI. These cross-section maps were prepared by Mr. Clancy and their correctness is shown by him. The lines through which the cross-sections were taken are shown on both the plan map, exhibit 1, and the apex map, exhibit 3. Cross-sections IV, V and VI are along vertical planes parallel with the plane of the east end line of the Stewart Fraction claim. These cross-sections show the vein from its termination along the Osborn fault, which is said by the defendants in error to be the side or bottom edge, and by the plaintiff in error to be the top or apex to the ore bodies in the Ontario. The other cross-sections, I, II and III, present cross-sections of the vein from the conceded apex in the Stewart Fraction claim. No. III is a cross-section from the apex at the point where the apex crosses the southerly side line of the Stewart Fraction claim. Nos. I and II show cross-sections through what is admitted to be the apex of the vein in the northerly part of the Stewart Fraction claim.

The model identified as plaintiff's exhibit 15, referred to in the testimony as the glass model, in which cross-sections of the vein nearly, if not quite, at right angle to the course of the Osborn fault are

shown, is conceded to be correct although it is criticized by some of the witnesses for the defense as giving a false impression of the vein. This model illustrates and represents the apex of the Stewart vein along the Osborn fault and its downward course from such apex to a line a short distance southerly of the south side line of the Stewart Fraction claim. The model is explained by the witness Alfred Frank. (Rec. pp. 188-190.)

The large model, defendants' exhibit L, presents the conditions in the ground testified to by the witnesses for both sides, substantially correct. It does not, however, show the stopes, and neither does it show, nor assume to show, the extension of the vein upward adjacent to the Osborn fault as disclosed by the glass model and the cross-section maps which are admitted to be correct. It is criticized in this regard by Mr. Winchell, one of the witnesses for defendants in error (Rec. pp. 532-534.) The model shows the vein in red, the Osborn fault in blue, and is explained by the witness Walter H. Wiley. (Rec. pp. 329-339.)

The large model, the glass model, and the maps identified as exhibits 1 and B and the maps showing cross-sections of the vein designated as exhibits 4, 5, 6, 7, 8 and 9, all show conclusively that the course pursued in following the vein from its termination along the Osborn fault to the section of the vein and ore bodies beneath the Ontario along verti-

cal planes parallel with the southerly end lines of the Stewart Fraction, is a pronounced downward course. In other words, the exhibits referred to disclose that the section of the vein and ore bodies therein beneath the Ontario are on a lower level than the level of the northerly termination of the vein in the Stewart Fraction claim when such levels are considered with reference to lines parallel with the end lines of the Stewart Fraction claim, which are the lines to be considered in determining the extralateral right of the plaintiff in error to the vein in controversy. Not a single witness for the defendants in error contradict these statements, while every witness for the plaintiff in error verifies their correctness.

The cross-section maps, designated as plaintiff's exhibits 4, 5, 6, 7, 8 and 9, present evidence positive of the downward course of the vein from its northerly termination to the ore bodies beneath the Ontario. Mr. Boehmer, a witness for the defendants in error, who had examined these cross-section maps, testified as follows:

"Q. Well, you have six cross-sections that have been introduced in this case by plaintiff, haven't you?

"A. I have.

"Q. Have you found any mistake in those cross-sections that you could point out?

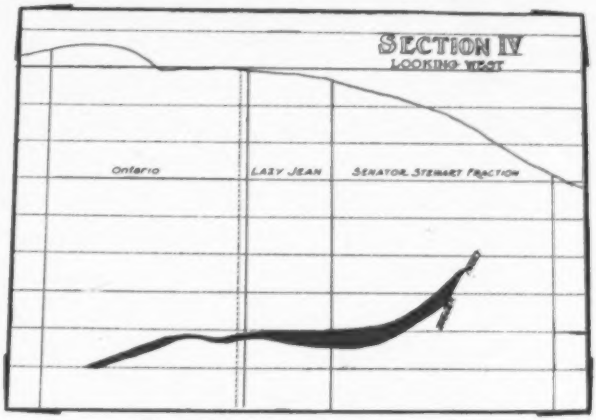
"A. No, I think that they are all right.

"Q. Isn't it true that every one of those

cross-sections through the lines that have been given there, show a downward course to the Ontario ore bodies?

"A. Yes sir; that is correct." (Rec. p. 496.)

For the convenience of the court we present below duplicates in reduced dimensions of the cross-section maps IV, V and VI, designated as defendants' exhibits 4, 8 and 9, in connection with a reference to the testimony relating thereto.

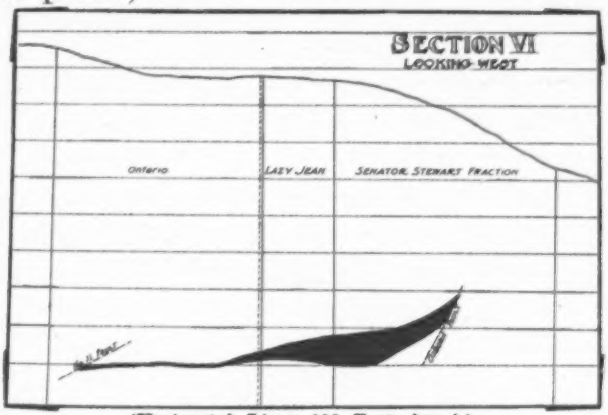


(Horizontal Lines 100 Feet Apart.)

Plaintiff's Ex. 4.

This cross-section map, plaintiff's exhibit 4, shows a cross-section of the vein taken along a vertical plane parallel with the vertical plane of the easterly end line of the Stewart Fraction claim from a point where the termination of the vein is disclosed above the 100 foot level, near the face of drift 106 east, as the same appears on plaintiff's

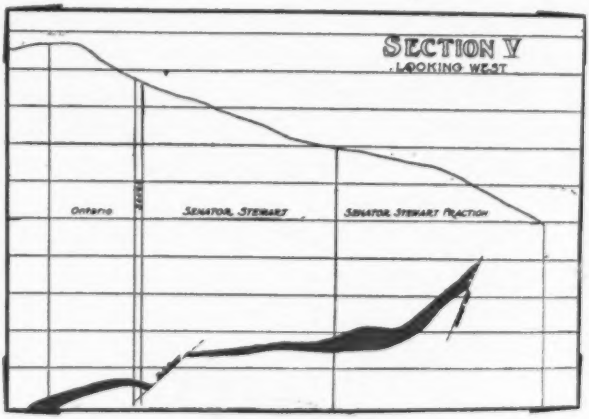
exhibit 1. (Rec. pp. 114-119.) The difference in elevation between the highest and lowest points in the vein, as shown by the cross-section, is approximately 260 feet. (Rec. p. 116.) The length of the vein from its highest point to the point where it begins to flatten, is approximately 240 feet. (Rec. p. 118). The average dip for this distance is 32 degrees. (Rec. p. 119.) The distance from the highest point to the lowest point of the vein shown on this cross-section is approximately 1020 feet. (Rec. p. 118.) A straight line drawn from the highest point to the lowest point in the hanging wall would have an inclination of approximately 20 degrees, and a straight line drawn from the highest point to the lowest point in the foot wall would have an inclination of approximately 13 degrees. (Rec. p. 119.)



(Horizontal Lines 100 Feet Apart.)

Plaintiff's Ex. 8.

Exhibit 8 is a map of a cross-section of the vein taken along a vertical plane parallel with the vertical plane of the easterly end line of the Stewart Fraction claim. The length of the vein shown by this cross-section is 1050 feet. The difference in elevation between the highest point and the lowest point in the hanging wall is approximately 200 feet, and the difference in elevation between the highest point and the lowest point in the foot wall is approximately 145 feet. The angle of inclination of a line drawn between the lowest and highest point in the hanging wall is approximately 10 degrees, and of a line between the highest and lowest point in the foot wall is approximately 6 degrees. (Rec. pp. 126-127.)



(Horizontal Lines 100 Feet Apart.)

Plaintiff's Ex. 9.

Exhibit No. 9 is a map of a cross-section of the vein taken along a vertical plane parallel with the vertical plane of the easterly end line of the Stewart Fraction claim, as shown on plaintiff's exhibit 1. The difference in elevation between the lowest and the highest point in the vein, as shown on this map, is approximately 385 feet. The angle of inclination from the highest point in the hanging wall to a point where the vein flattens, a distance of approximately 250 feet, is 40 degrees. (Rec. pp. 127-129.)

Exhibit No. 5 shows a cross-section of the vein along a vertical plane, passing through the apex of the vein, as the apex is admitted by the witnesses for defendants in error. The apex of the vein is disclosed in the raise above the apex drift. The cross-section shows that the hanging wall, as it appears on this cross-section, has an inclination of approximately 20 degrees, and a line drawn from the highest point in the foot wall to the lowest point in the foot wall, would have approximately the same inclination. The distance from the highest point to the lowest point of the vein, as shown on this exhibit, is approximately 1200 feet. The difference in elevation between the same points is 400 feet. (Rec. pp. 119-122.)

Exhibit No. 6 shows a cross-section of the vein along a vertical plane passing through the apex of the vein, as admitted by witnesses for defendants

in error, which is disclosed in the raise above the apex drift. The cross-section of the vein shown on this exhibit is taken along, approximately, the true dip of the vein from the apex. That this is true will appear from a reference to plaintiff's exhibit 1, which shows that the line of the cross-section forms approximately a right angle with the strike of the vein, as disclosed by the drifts on the vein, beneath the Stewart Fraction claim. The length of the vein, measured along the hanging wall, as shown on this exhibit, is approximately 1000 feet. The angle of inclination of a line connecting the lowest point and the highest point in the hanging wall is approximately 30 degrees, and the angle of inclination of a line from the highest point in the foot wall to the lowest point in the foot wall is approximately 35 degrees. The difference in elevation between the highest and lowest points in the vein, disclosed by this exhibit, is approximately 440 feet. The angle of inclination from the highest point for a distance of approximately 130 feet to the point where the vein flattens, is 45 degrees. (Rec. pp. 122-124.)

Exhibit No. 7 shows a cross-section of the vein along a vertical plane passing through the apex of the vein where it crosses the southerly side line of the Stewart Fraction claim and the most southerly exposure of the vein. The difference in elevation between the highest point and the lowest

point of the vein shown on this exhibit is 410 feet, and the angle of inclination of a line drawn from the highest point in the hanging wall to the lowest point in the hanging wall is approximately 35 degrees, and of a line from the highest point in the foot wall to the lowest point in the foot wall is approximately 25 degrees. The length of the portion of the vein shown by this cross-section is 1080 feet. (Rec. pp. 124-126.)

The testimony of the witness Clancy with reference to these cross-sections is not contradicted, and, as stated, it is conceded by defendants in error that the maps of the cross-sections are correct. In view of the conditions disclosed by these cross-sections, as well as by the large model, defendants' exhibit L, the glass model, plaintiff's exhibit 15, and exhibits 1 and B, it is established beyond controversy that there is a downward course from the termination of the vein along the Osborn fault to the section of the vein and ore bodies beneath the Ontario.

Mr. Clancy testified that the elevation at the apex, as the same is disclosed in the raise above the apex drift, designated as "Raise 4 East," is 3025 feet, and that the elevation of the apex, as it crosses the easterly end line of the Stewart Fraction claim, is 2672 feet. (Rec. p. 77.) The angle of inclination of the apex is approximately 30 degrees between the points referred to. (Rec. p. 277.) This is approximately the angle of the slope of the mountains in the vicinity.

Senator Stewart Fraction Claim Properly Located With Reference to the Discovery Vein.

There is neither allegation nor proof with reference to the discovery vein in the Stewart Fraction claim, but by virtue of the patent there is a presumption that a discovery was made and that the claim was properly located with reference to the discovery vein.

> Work Mining & Milling Co. v. Jack Pot Mining Co., 194 Fed. 620;
>
> Enterprise Mining Co. v. Rico-Aspen Mining Co., 167 U. S. 108;
>
> Del Monte M. & M. Co. v. Last Chance M. & M. Co., 171 U. S. 55.

The Supreme Court of Idaho, while accepting the proposition of law stated above for the purpose of the case, expresses a doubt as to its correctness and intimates that it devolved upon plaintiff in error to establish by evidence that the claim was properly located with reference to the discovery vein. The court, in the opinion, says:

> "In the absence of proof as to the course of the discovery vein, this presumption undoubtedly arises; but it is doubtful if it has any application in a case where no question arises over any fact, the existence of which was essential to secure the patent, or where the action

> in no way involves the discovery vein or the right of the locator to pursue it in any manner or direction, and the party against whom the presumption is invoked was not a party or privy to the location or patent proceedings. But, for the purposes of this case, we shall proceed on the theory that a legal presumption arises, from the issuance of patent to the Stewart Fraction, that the end lines as established on the ground are the true end lines for all the purposes of this case."

Mr. Lindley disagrees with the decision of the Circuit Court of Appeals for the Eighth Circuit in the case first cited above, in which it was decided that after patent a presumption obtains that the claim was properly located with reference to the discovery vein, and expresses the opinion that such a doctrine "will not receive the sanction of the Supreme Court of the United States." (Lindley on Mines, 3rd ed., p. 1905.)

Mr. Lindley, in criticism of the said case, generally referred to as the Dr. Jack Pot case, says:

> "The court of appeals, in the Work-Doctor Jack Pot case, quotes in support of its rulings an excerpt from the opinion of the supreme court of the United States in Enterprise Mining Company v. Rico-Aspen Mining Company:— 'The presumption, of course, would be that the vein ran lengthwise and not crosswise of the claim as located.'

> "In this case a patent has been granted for a mining claim lying parallel with the line of a discovery tunnel. It was contended that the tunnel locator should have adversed the patent application, in order to have secured the right to veins discovered in the tunnel which crossed the patented claim, the inception of the tunnel right being prior in time. In using the above-quoted language the court undoubtedly referred to a natural rather than a legal presumption. In any event, the case is not authority for the rule that such a presumption, if a legal one, is conclusive."

As a matter of fact, the court in the opinion in the Dr. Jack Pot case did not hold that the presumption that the discovery vein extends lengthwise of the claim, is a conclusive presumption. The court said:

> "As already suggested, the fact that a discovery vein existed in the discovery cut must, for the purposes of this case, be conclusively presumed, and *prima facie* at least the end lines of the claim as fixed in the patent are the true end lines, and, in the absence of evidence showing that the discovery vein instead of running lengthwise of the claim in fact crosses opposite side lines of the claim, the end lines as fixed by the patent must prevail." (194 Fed. 629.)

When the decisions of this Court as to the effect

and operation of a patent for a mining claim are considered in view of the provision of section 2320 of the Revised Statutes of the United States, which declares: "No claim shall extend more than three hundred feet on each side of the middle of the vein at the surface," there can be no doubt as to the correctness of the decision in the Dr. Jack Pot case, and the holding in that case already has the approval of the Supreme Court of the United States as we shall show.

A patent to a mining claim is conclusive against a collateral attack of every matter which the land department is required to determine before the patent is issued.

St. Louis Smelting, etc. Co. v. Kemp, 104 U. S. 636;

Steel v. St. Louis Smelting, etc. Co., 106 U. S. 447;

Lindley on Mines, 3rd Ed. pp. 1889, et seq.;

Creede & C. C. M. & M. Co. v. Uinta Min. Co., 196 U. S. 337;

Lawson v. U. S. Mining Co., 207 U. S. 1.

In the opinion in the case of Creede etc. Co. v. Uinta etc. Min. Co., cited above, the court, after referring to the laws of Colorado relating to the location of mining claims, said:

"The issue of a patent for a lode claim in

> Colorado is therefore not only a conclusive adjudication of the fact of the discovery of the mineral vein, but also of compliance with these several provisions of its statutes."

As the land department of the government is without jurisdiction to issue a patent for "more than three hundred feet on each side of the middle of the vein at the surface" it necessarily follows that there must be some inquiry made with reference to the course of the discovery vein, and where a patent is issued for a tract of land 600 feet or less in width and more than 600 feet in length, there is at least a *prima facie* presumption that the land department has not exceeded its jurisdiction and that the claim was properly located with reference to the discovery vein. So that, the statement by Mr. Justice Brewer in the opinion in the case of Enterprise Mining Company v. Rico-Aspen Mining Company, 167 U. S. 115, that "The presumption, of course, would be that the vein ran lengthwise and not crosswise of the claim as located," has reference to a legal presumption and is strictly correct in view of the limitation placed upon the jurisdiction and power of the land department by section 2320 of the Revised Statutes and in view of the presumption attaching to a patent which is in the nature of a judgment *in rem*. Furthermore, Mr. Justice Brewer in the Del Monte case, 171 U. S. p. 55, says:

> "Our conclusions may be summed up in these

propositions: First, *the location as made on the surface by the locator determines the extent of rights below the surface.* Second, *the end lines, as he marks them on the surface, with the single exception hereinafter noticed, place the limits beyond which he may not go in the appropriation of any vein or veins along their course or strike.* Third, every vein 'the top or apex of which lies inside of such surface lines extended downward vertically' becomes his by virtue of his location, and he may pursue it to any depth beyond his vertical side lines, although in so doing he enters beneath the surface of some other proprietor. Fourth, *the only exception to the rule that the end lines of the location as the locator places them establish the limits beyond which he may not go in the appropriation of a vein on its course or strike is where it is developed that in fact the location has been placed, not along, but across, the course of the vein.* In such case the law declares that those which the locator called his side lines are his end lines, and those which he called end lines are in fact side lines, and this upon the proposition that it was the intent of Congress to give to the locator only so many feet of the length of the vein, that length to be bounded by the lines which the locator has established of his location." (Italics ours.)

In the opinion in the case of St. Louis Smelting etc. Co. v. Kemp, 104 U. S. 636, Mr. Justice Field

said:

> "The general doctrine declared may be stated in a different form, thus: a patent, in a court of law, is conclusive as to all matters properly determinable by the Land Department, when its action is within the scope of its authority; that is, when it has jurisdiction under the law to convey the land. In that court the patent is unassailable for mere errors of judgment. Indeed, the doctrine as to the regularity and validity of its acts, where it has jurisdiction, goes so far that if in any circumstances under existing law a patent would be held valid, it will be presumed that such circumstances existed."

As the land department was without authority to issue a patent for a greater area than 300 feet on each side of the center of the discovery vein, and as the claim is more than 600 feet in length, it follows, in view of the rule announced by Mr. Justice Field, in the foregoing quotation, that a presumption exists that the discovery vein extended lengthwise of the claim.

Mr. Lindley further says, in criticism of the Dr. Jack Pot case:

> "The decision of the circuit court of appeals in the case under discussion appears to us to be out of harmony with the reasoning of the same court in the case of Uinta Tunnel Mining and Transportation Co. v. Creede & Cripple Creek

> Mining & Milling Co., with reference to adjudications of the land department which are *res inter alios acta.*" (Lindley on Mines, Vol. 3, 3rd ed., p. 1907.)

In the case of Uinta etc. Mining Co. v. Creede etc. Mining Co. it was decided that the patent, while conclusive that a discovery was made, does not furnish evidence of the date of the discovery except that it was made before patent issued. The decision was affirmed by the Supreme Court of the United States (196 U. S. 337). In the Dr. Jack Pot case the question was with reference to the presumption that the discovery vein extends lengthwise of the claim. The court recognizes that the patent is conclusive that a discovery was made, and said:

> "* * * and prima facie at least the end lines of the claim as fixed in the patent are the true end lines, and, in the absence of evidence showing that the discovery vein instead of running lengthwise of the claim in fact crosses opposite side lines of the claim, the end lines as fixed by the patent must prevail." (194 Fed. 629.)

We are unable to see any want of harmony between the decision in the Uinta case and the decision in the Dr. Jack Pot case.

In discussing the Dr. Jack Pot case Mr. Lindley further takes issue with the proposition that a

patent for a mining claim conclusively determines that the provisions of the law of the state in which the claim is situated providing the conditions upon which title may be acquired, have been complied with. A sufficient answer to Mr. Lindley's views in this regard is furnished by the above quotation from the opinion of the Supreme Court of the United States in the case of Creede etc. Mining Co. v. Uinta etc. Mining Co., 196 U. S. 337.

Mr. Lindey's entire criticism of the Dr. Jack Pot case is founded on the view that "a lode patent does not raise any presumption in justification of the invasion of another's territory, as to the position of the apex or the course of the vein, but these facts, when challenged by the proprietor of the invaded claim, should be proved by the apex claimant, regardless of presumptions flowing from the patent." (Lindley on Mines, 3rd ed. p. 1900.)

If this view is correct, how does the learned author distinguish between the presumption that a discovery was made and the presumption that the discovery was upon a vein extending lengthwise of the claim? It would seem to us that for the same reason that a patent to a mining claim is conclusive against third parties that a discovery was made, it is also conclusive that the discovery vein extends lengthwise of the claim, until, as said by Mr. Justice Brewer, development discloses otherwise, as both the fact of discovery and the situation of the dis-

covery vein must be found and determined by the land department before a patent issues.

In the case of Stewart Mining Company v. Jonathan Bourne, Jr., et al., recently decided by the Circuit Court of Appeals for the Ninth Circuit, and to which reference has already been made, the court, in discussing the presumption as to the existence of the discovery vein and the situation of same with reference to the lines of the claim, said:

> "It appears that the Senator Stewart Fraction is also a patented claim, and although no reference is made either in the pleadings or in the evidence to the discovery vein of that claim, the conclusive presumption is that there was a discovery vein therein, that the land was properly located and that all preliminary and precedent acts necessary to authorize and justify the issuance of the patent had been performed as the law required. Authorities to that effect are so numerous as to render their citation unnecessary. Among those prerequisites is the requirement that the boundaries of the claim be so marked on the ground as to embrace not exceeding 300 feet on each side of the middle of the vein, and not exceeding 1,500 feet in length along the vein. In Lindley on Mines, 3d ed. pp. 725, it is said:
>
> " 'The 'course of the vein' appearing on the surface is plainly the course of its apex, which is generally inclined and undulating and departs more or less materially from the 'strike.'

> The miner is required to locate his claim 'along the vein,' which plainly means along the outcrop or course of the apex. It would be impracticable for him to locate it along the strike, as it usually takes years of underground work to determine the strike through the length of his claim. It is often difficult even to locate properly along the apex, especially where the walls are obscured by surface disintegration or are covered with a capping or large accumulation of detritus.'
>
> "Nothing to the contrary appearing, the conclusive presumption is that the Senator Stewart Fraction claim was located not exceeding 1,500 feet along the course or strike of the discovery vein and not exceeding 600 feet in width."

In conclusion, we respectfully submit that the judgment should be reversed.

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Attorneys for Plaintiff in Error.

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SUPREME COURT OF THE UNITED STATES

October Term 1914

No. 205

STEWART MINING COMPANY,
Plaintiff in Error,

vs.

ONTARIO MINING COMPANY, STANLEY A. EASTON and MYRON A. FOLSOM,
Defendants in Error.

REPLY BRIEF FOR PLAINTIFF IN ERROR

CHARLES S. THOMAS,
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REPLY BRIEF FOR PLAINTIFF IN ERROR

JURISDICTION

The jurisdiction of this court is challenged upon the ground that the decision of the Supreme Court of Idaho was based upon a question of fact. It is said that the decision that the terminal edge of the vein extending easterly and westerly in the Senator Stewart Fraction claim along the Osborn fault is not a top or apex, involved a question of fact only, and that such decision was determinative of the case.

The main controversy in the case is with reference to the ownership of the section of the vein

beneath the Ontario claim within the vertical planes of the end lines of the Stewart Fraction claim extended. As plaintiff in error asserts ownership of such portion of the vein by virtue of the extralateral right recognized and defined by section 2322 of the Revised Statutes of the United States, it is, of course, necessary to apply the law as therein declared to the facts in order to determine the question of ownership. Referring to that section, we find that it is essential to an extralateral right that the mining claim upon which the right is based should contain the apex of the vein and that this apex should be so situated with reference to the lines of the claim that the vein can be followed on a downward course from the apex along the extralateral right planes which are parallel to the vertical planes of the end lines of the claim extended, to the part of the vein to which the right is asserted. In order, therefore, to determine the question of ownership of the vein and ore bodies therein beneath the Ontario claim, it was necessary for the Idaho court to determine what is meant by "downward course" and "top or apex," and then apply such definitions to the facts. This is just what the Idaho court did, as is shown by the opinion of that court. In the opinion the court said:

> "The important and decisive assignment of error is lodged against the finding of the

court that the termination of the vein in the Stewart Fraction along the Osborne fault is not the top or apex of the vein. There is some difference among the witnesses as to the inclination and apparent strike of the vein at certain points in this edge where it is curled up along the Osborne fault, but, taken as a whole, the evidence supports the findings, and the controversy arising on this appeal becomes a question as to the correct interpretation and application of the rule of law that should apply to the facts of this case. The whole question rests on the correct application of the apex and extralateral rights, provisions of Section 2322, U. S. Revised Statutes."

The court further said in the opinion:

"There seems to be really no serious contention as to the sufficiency of the evidence to support these findings, except as to the finding with reference to the apex of the vein within the Stewart Fraction and the apex of the ore bodies within the Ontario claim in which the appellant claims the ownership, and that is more a difference of conclusion than probative fact. The controversy here involved resolves itself more to a proper application of the rules of law governing

extralateral rights to lode mining claims than to any serious conflict over the facts of the case."

Mr. Lindley quotes the definition of apex given by Mr. Ross E. Brown, as follows:

> "The apex is all that portion of the terminal edge of the vein from which the vein has extension downward in the direction of its dip." (Lindley on Mines, 3d ed. p. 688.)

Mr. Lindley, in speaking of this definition, says:

> *"The above definition, which accords with our views, involves the elements of terminal edge, and downward course therefrom."* (3rd ed. p. 688.) (Italics ours.)

The definition of top or apex adopted by the lower court does not differ from the definition approved by Mr. Lindley. In fact, all of the authorities agree that an apex is a terminal edge from which there is a downward course.

As it is conceded that the vein has a terminal edge in the Stewart Fraction claim along the Osborn fault, the court in determining whether such terminal edge is a top or apex found it necessary to define the words "downward course" and then inquire whether there is a downward course from such edge to the ore bodies in controversy in view of the admitted facts. The court decided

that the words "downward course," used in Section 2322 of the Revised Statutes of the United States, have reference to a course more on the dip than along the strike and that where the course pursued is at an angle of more than 45° to the dip of the vein, the course is not a downward course but an "onward course." After formulating this definition, the court applied the same to the admitted facts and determined that the terminal edge along the Osborn fault is not an apex to the section of the vein containing the ore bodies in controversy for the reason that in following from such terminal edge to such ore bodies along the extralateral planes of the Stewart Fraction claim the course pursued is more along the strike than on the dip of the vein, or at an angle of more than 45° to the dip of the vein, in consequence of which the course is not downward and the plaintiff in error has no extralateral right to such ore bodies.

In the opinion of the lower court it is further said:

> "It is clear to us from the wording of the statute (Sec. 2322, U. S. Rev. Stats.) and the reasoning of the opinions that there can be no extralateral right on the strike of the vein."

According to the definition of downward course, adopted by the lower court, any course

which forms an angle of more than 45° with the dip of the vein is along the strike and is an "onward course," as distinguished from a "downward course."

In view of the definition of apex, the question whether or not a terminal edge is an apex, can only be determined by the application of a correct definition of downward course.

As it is admitted that there is a terminal edge of the vein in the Stewart Fraction claim, extending easterly and westerly along the Osborn fault, and it is conceded that, in pursuing a course from such terminal edge to the ore bodies in controversy along the extralateral planes of the Stewart Fraction claim, one proceeds from a higher elevation to a lower elevation, it follows that the decision of the Supreme Court of Idaho was the result of the application of an erroneous definition of the words "downward course." This being true, the case clearly presents a federal question.

Mammoth Mining Co. v. Grand Central Min. Co., 213 U. S. 72.

In the opinion in the case just cited this court said:

> "Of course, if these findings rest on a false definition they may have to be reconsidered, and cannot be assumed to be correct. But the evidence will not be discussed here. The

only question with which we shall deal is whether the plaintiff in error makes out the alleged mistake of law."

OPINION OF UNITED STATES DISTRICT JUDGE DIETRICH

Judge Dietrich says:

"*That a downward course may be pursued upon the vein from this edge to the disputed ore bodies is conceded;* but we are not to conclude that an edge is the apex merely because the vein may be followed therefrom upon an inclination downward; clearly cases may very well arise where such a course can be followed from an uppercut or bottom edge. *Nor is it controlling that such downward course may be parallel with the end lines. The real relation of any given edge to the vein is in no wise affected by its relation to the boundary lines of the claim embracing it. These lines are wholly artificial and fortuitous, and if an edge is the top or apex of the vein it is such regardless of the question as to how the boundary lines of the claim are laid, or indeed whether any location at all has been made.*" (Italics ours.)

The statement that the question of apex, where an extralateral right is involved, is not to any extent dependent upon the relation of the claim

and its lines to the vein and the edge thereof, is fundamentally erroneous, and the error thus made resulted in the decision by Judge Dietrich.

The essentials of an extralateral right are:

1. A mining claim.

2. The ore body or portion of the vein to which the right is asserted must be situated within the vertical planes of the end lines of the claim extended.

3. A terminal edge of the vein within the claim; and

4. A downward course from such terminal edge to the portion of the vein or ore body to which the right is asserted along the extralateral right planes which are parallel with the vertical planes of the end lines.

In view of these essentials, whenever an extralateral right is involved, it is absolutely necessary to consider the relation of the terminal edge to the lines of the claim.

Although it was found by Judge Dietrich that there is a downward course from the edge of the vein along the Osborn fault to the ore bodies in controversy, he declined to find such edge an apex and held that the apex is the terminal edge of the vein extending northerly and southerly through the Senator Stewart and Stewart Fraction claims. In reaching this conclusion, he declined to consider the relation of the terminal edge to the

lines of the claim, and regarded as apex only that portion of the terminal edge from which there is the *most pronounced downward course* to the ore bodies in controversy.

The only requirement of the Act of Congress is that there must be a downward course from the terminal edge. In holding that the terminal edge in question is not an apex, Judge Dietrich placed a construction on Section 2322 of the Revised Statutes of the United States which is unwarranted by the language of the section.

SUMMARY OF CASE

No attempt is made in the brief for defendants in error to defend the construction of the words "downward course" adopted by the lower court. It is said, however, that such construction is immaterial in view of the finding that the terminal edge along the Osborn fault in the Stewart Fraction claim is not an apex. This, as we have shown in discussing the question of jurisdiction, is not correct for the reason that the finding of the court that the terminal edge along the Osborn fault is not an apex, resulted from the application of an erroneous definition of the words "downward course."

As the fact that there is a downward course from such terminal edge along the extralateral

right planes to the ore bodies in controversy is not disputed, it follows that plaintiff in error is entitled to the extralateral right claimed, and judgment should be ordered accordingly.

Respectfully submitted,

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Supreme Court, U. S.
FILED
FEB 25 1915
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CLERK

IN THE

Supreme Court

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STEWART MINING COMPANY,
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vs.

ONTARIO MINING COMPANY, STANLY A. EASTON and MYRON A. FOLSOM,
Defendants in Error.

OCTOBER TERM 1914.

No. 205.

(October Term 1913, No. 611.)

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IN THE

Supreme Court

OF THE

United States

STEWART MINING COMPANY,
Plaintiff in Error,

vs.

ONTARIO MINING COMPANY, STANLY A. EASTON and MYRON A. FOLSOM,
Defendants in Error.

OCTOBER TERM 1914.

No. 205.

(October Term 1913, No. 611.)

MYRON A. FOLSOM,
JOHN P. GRAY,
JAMES E. GYDE,
Counsel for Defendants in Error.

FACTS.

In its complaint the Stewart Mining Company alleged that the top or apex of a mineral vein "crossed the easterly end line of said (Stewart Fraction) Claim at approximately the center thereof between corners No. 1 and 2, and extends within the boundaries of said claim in a westerly direction, following the general course of said claim for a distance of 705 feet more or less." (Record, page 2.) It was further alleged that the vein thus described on its downward course between the end lines of the said Stewart Fraction Claim extended in their own direction southerly, passed beneath the surface of the Ontario Claim, and that the defendants had extracted ore from said vein beneath said surface. Defendants denied these allegations and alleged that the ore mined was a part of the Ontario Claim and that the defendants were entitled to mine such ores by virtue of a lease which had been granted to them by Jonathan Bourne, Jr., the owner of the Ontario Claim.

After evidence had been offered by the respective parties the trial court found that the ore in dispute was a part of a vein the apex of which

crossed the south side line of the Stewart Fraction Claim, and the vein on its strike northerly did not reach any other line of the Stewart Fraction Claim, but was cut off by a large fault, known as the Osborn Fault, at a point near the north line of said claim; that the onward course or strike of the vein was north 30 degrees east; that the vein had a downward course easterly and on its downward course passed beneath the east end line of the Stewart Fraction Claim; that the end of the vein against the Osborn Fault has an onward course north 41 degrees west and has a steeply inclined downward course southeasterly. It was further found by the Court that the end of the vein against the fault was the end of the vein on the line of its dip, and if the country below the fault were eroded it would present the appearance of an overhanging cliff; that the vein had been followed on the level from the fault referred to to the ore bodies beneath the Ontario Claim. It was further found by the Court that the top or apex of the vein which crossed the south side line of the Stewart Fraction Claim was practically level. (Rec., pp. 14-17.) Judgment was entered for defendants.

The Supreme Court of Idaho adopted the findings of the trial Court and made the additional finding that the end of the vein against the fault was "turned, curled or cupped upward caused by the disturbance which created the fault and cut off the vein." (Rec., p. 552.)

The following diagram illustrates the facts as found by the courts below:

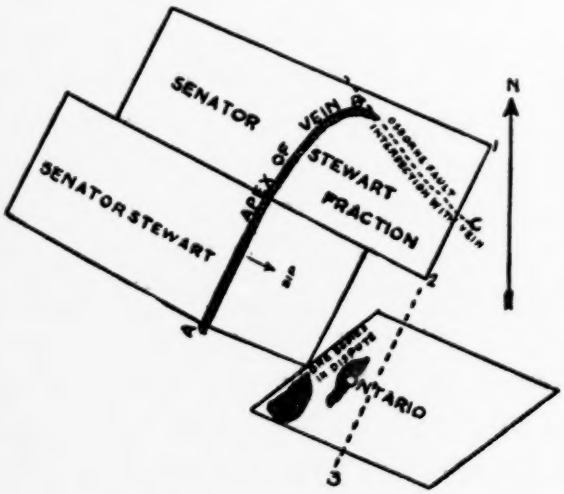

Figure 1.

The Supreme Court based its decision in favor of defendants upon the following grounds:

1st. That the edge of the vein against the Os-

born Fault, which was claimed by the Stewart Company to constitute the apex, was not the top or apex, but was the edge of the vein on the line of its dip; that is, the side edge.

2nd. That if the Court had found such side edge of the vein constituted the apex thereof, the Stewart Mining Company would nevertheless have been denied the right to follow the vein southerly because in doing so it would be following the vein on its onward course and on a level, instead of following it on the vein's downward course.

3rd. That if the Court were to indulge in a presumption in the absence of evidence, that there was a vein running through the center of the claim from end line to end line upon which the discovery was based and if the Court were to assume that the present vein was a secondary vein, the Stewart Mining Company could not follow the latter southerly, because such pursuit would not be from the apex thereof, and because the pursuit would necessarily be made on a level rather than downward.

JURISDICTION.

The Court is without jurisdiction of this case because:

1st. The Supreme Court of Idaho decided that the alleged apex of the vein as described in the complaint had no existence; that the so-called apex was the side edge of the vein on the line of its dip.

(a) This involved a question of fact.

Bluebird M. Co. v. Largey, 49 Fed. 289, 291.

Illinois Sil. M. Co. v. Raff, 34 Pac. 544, 545.

Larkin v. Upton, 144 U. S. 19.

Mammoth M. Co. v. Grand Central M. Co., 213 U. S. 72.

(b) The findings of the State Court on questions of fact are binding on this Court on writ of error.

Mammoth Mining Co. vs. Grand Central Mining Co., 213 U. S. 72.

Chrissman v. Miller, 197 U. S. 313.

(c) The Idaho Court having based its decision primarily upon a question of fact sufficient to uphold the judgment, it is immaterial that the Court also discussed and decided other questions which are federal in their nature.

Merced M. Co. v. Boggs, 70 U. S. (3 Wall.) 304, 310.

Dover v. Richards, 151 U. S. 658.

In Mammoth Mining Company vs. Grand Central Mining Company, 213 U. S. 72, the jurisdiction of this Court was challenged. It was claimed that the decision of the Supreme Court of Utah on the facts involved in that case rested on a false definition of the words "lode or vein," as used in the Revised Statutes of the United States.

This Court held that it was bound by the findings of the Court below "unless the findings rest on a false definition." This Court after examining the opinion of the State Court said:

> "Definitions played no important part in leading to the conclusion, on the contrary most if not all, of the findings which we have stated deal with pure matters of fact."

And the Court pointed out that such definitions as were adopted were those given by this Court in previous cases.

As the State Court was against the plaintiff in error on the facts, this Court denied that it had jurisdiction to review the judgment of the State Court.

In the case at bar, the principal and controlling question was whether the ore bodies beneath the Ontario were part of a vein the apex of which

crossed the east end line of the Stewart Fraction Claim and continued westerly 705 feet in the direction of that claim. The Supreme Court of Idaho found that no such apex existed. The Court held that the edge of the vein within the Stewart Fraction Claim which substantially corresponded in position to that of the alleged apex as described in the complaint, was the undercut end edge of the vein on the line of its dip. This was merely a question of fact. While the Supreme Court of Idaho discussed the words "top" or "apex," it disclaimed any intention of making any new definition or application of those words, but merely adopted the definition approved by this Court in Larkin vs. Upton, 144 U. S. 19.

The language of the lower Court on this point was as follows:

> "The definitions of the word 'apex' as used in the Statute all reach the one inevitable conclusion that it is the highest point in the vein. But this is only a general definition and its application to any particular vein or peculiar location may, and often will, call for further particularity of description. It must be the top or terminal edge of the vein on the surface or the nearest point to the surface, and it must be the top of the vein proper rather than a spur or feeder, just as the highest point

> in the roof of a house would be taken to be the apex of the house, and not the chimney or flagstaff. Again, an apex is a point from which the vein has a dip as well as strike or course, else it confers no extralateral right."

Obviously, there can be no dispute as to the correctness of the foregoing definition in so far as this case is concerned.

In the case of Stewart Mining Company v. Bourne, 218 Fed. 327, the Circuit Court of Appeals for the Ninth Circuit decided a case which involved the identical properties and the same contentions of fact and law, and the same evidence as are here involved. The defendant in that case was the owner of the Ontario Claim, whereas the principal defendant in this case is the lessee thereof. The Court of Appeals after discussing the evidence, decided that the edge of the vein against the Osborn Fault from B to C on Figure 1, *ante,* was not the apex of the vein. The Court pointed out that plaintiff had "based its complaint solely upon an alleged apex thus described" and said:

> "The *evidence* showing, as has been above pointed out, that there is no such apex, the suit of plaintiff must necessarily fail."

If we are correct in our contention that the Idaho Court determined as a fact that the alleged apex upon which plaintiff relied did not exist, this was sufficient to uphold its judgment, and it is unimportant that it may have discussed and decided questions of federal law. This Court is without jurisdiction.

ARGUMENT ON THE MERITS.

If this Court should decide that it possess jurisdiction of this controversy, the record will compel an affirmance of the judgment of the Supreme Court of Idaho.

The Assignment of Errors present three questions only which can be considered by this Court, to-wit:

1st. Did the Supreme Court of Idaho correctly hold that the edge of the Stewart vein against the Osborn Fault was not the apex of the ore bodies in dispute, but was the end edge of the vein on the line of its dip?

2nd. Was the Supreme Court of Idaho correct in denying the right of plaintiff in error to pursue the vein from the end edge against the Osborn Fault to a point beneath the Ontario Claim,

for the reason that such pursuit would be made on the onward course of the vein instead of the downward course thereof?

3rd. Did the Supreme Court of Idaho err in holding that if the vein in controversy were a secondary vein, it could not be followed beneath the surface of the Ontario Claim, because the pursuit would not be from the apex thereof and would necessarily be made on the strike of the vein?

I.

APEX.

DID THE SUPREME COURT OF IDAHO CORRECTLY HOLD THAT THE EDGE OF THE STEWART VEIN AGAINST THE OSBORN FAULT WAS NOT THE APEX OF THE ORE BODIES IN DISPUTE, BUT WAS THE END EDGE OF THE VEIN ON THE LINE OF ITS DIP?

The complaint alleged that the top or apex of the vein in controversy crossed the easterly end line of said Stewart Fraction Claim at approximately the center thereof between corners No. 1 and 2 and extends within the boundaries of said claim in a westerly direction following the general

course of said claim for a distance of 705 feet, more or less. (Record, p. 2.)

The Supreme Court of Idaho as well as the trial Court found *as a fact* that there was no part of the apex of the vein in the position alleged in the complaint, but that the apex occupied a position almost at right angles to that described in the complaint. Both courts found that the edge of the vein claimed by plaintiff to be the apex, was the undercut end edge of the vein on the line of its dip.

As we have already pointed out in the discussion of the question of jurisdiction, these findings involve pure questions of fact, and, unless the findings rest on an erroneous definition, are binding on this Court.

In approaching a consideration of the merits of this case, we must not lose sight of the fact that the ore bodies in controversy are beneath the surface of the Ontario Mining Claim, which was patented seven years before the Stewart Fraction Claim was even located (Rec., p. 14: Find. 2), and that there is a strong presumption that those ore bodies belong to the owner of the Ontario Claim. The burden is upon the plaintiff to show,

not only that these ore bodies were part of the vein but that the apex thereof was in plaintiff's ground, and was so located as to entitle plaintiff to the ore bodies in dispute.

U. S. Min. Co. vs. Lawson, 207 U. S. 1.

What constitutes the apex of a vein? The authorities all agree that the words "top" or "apex" were not miners' words, but they were first used as mining terms at the time the Statute was passed. The word "top" is a common word. It requires no legal learning, no geological knowledge, no engineering knowledge, to determine its meaning; only the common knowledge of an average man is required to tell what constitutes the top of anything, and the Courts have given the term "top" its usual meaning in construing this Statute. There is nothing ocult or mysterious in the word "top" as used in the Statute of the United States.

This Court in Larkin vs. Upton, 144 U. S. 19, quotes the instruction of the trial Court as follows:

> "The apex of a vein or lode is the highest point thereof and may be at the surface of the ground or at any point below the surface."

In commenting on this instruction, this Court said:

> "While the giving of this instruction was at the trial excepted to, error has not been here assigned thereon, and with one construction at least it is undoubtedly correct. The apex of the vein is not necessarily a point, but often a line of great length. Any portion of the apex *on the course or strike of the vein* found within the limits of the claim is sufficient discovery to entitle the locator to obtain title."

Mr. Costigan, in his work on Mining Law, page 105, thus defines apex:

> "The apex is the top of the lode, whether that top outcrops or whether it is overlaid."

The late Chief Justice Beatty once defined the word "apex" as follows:

> "The top or apex of any part of a vein is found by following the line of its dip up to the highest point at which vein matter exists in the fissure." Quoted in Duggan v. Davey, *infra*.

In Duggan v. Davey, 4 Dak. 410, 26 N. W. 887, the Court said:

> "It is indeed difficult to see how any serious question could have arisen as to the practical meaning of the term 'top' or 'apex,' but it seems in fact to have become somewhat cloud-

> ed. I apprehend that if any intelligent person were asked to point out the top or apex of a house, a spire, a tree or a hill, he would have no difficulty in doing so, and I do not see why the same common sense should not be applied to a vein or lode. Statutory words are to receive their ordinary meaning or interpretation except where shown to have a special meaning, and as I think the testimony shows these terms were unknown to miners before the statute, the ordinary rule would seem to apply to them."

In Lindley on Mines, 3rd Ed., Sections 306, 309, the author has collected the definitions and discussed the subject.

Plaintiff in error quotes at length from this author, but has overlooked certain language contained in Section 309, *viz.*:

> "It has sometimes happened, especially with veins of slight inclination from the horizontal, that in the process of erosion, the side edge representing a dip-line has been exposed to constitute an outcrop. * * * It is quite apparent that such outcrops do not constitute apices."

An examination of the opinion of the Supreme Court of Idaho will show that the Court fully appreciated the meaning of the words "top" or "apex" as used in the Statute, and as defined by this Court and the other authorities referred to. The Court in effect held that the words "top" or

"apex" of the vein meant the top edge of the vein whether it outcropped or not.

An examination of the opinion of that Court will also show that it correctly applied the definition to the facts as found by the trial Court, which findings were approved by the Supreme Court.

In brief, both Courts found that the vein on its onward course crossed the south side line of the Stewart Fraction Claim at about right-angles; that it extends to within about 100 feet of the north side line of the Stewart Fraction Claim, and is there cut off on its onward course or strike by what is known as the Osborn Fault; that the upper edge of the vein from the south side line to the point where it terminates against the fault is substantially level; that the vein has a dip southeasterly of about 40 degrees from a horizontal; that the edge of the vein against the fault has a steeply inclined downward course southeasterly, but curls upward against the fault; that neither the top edge from the south side line to the fault nor the inclined edge against the fault comes to the surface; that the edge of the vein against the Osborn Fault has a course north 41 degrees west,

whereas the top edge of the vein from the south side line to the Osborn Fault has a course north 30 degrees east; that the dip of the Osborn Fault is southwesterly; the drifts run by the miners from the vicinity of the Osborn Fault to the Ontario ore bodies are substantially level.

It should not require any great argument to convince anyone that the top edge of this vein is the level edge which crosses the south side line of the Stewart Fraction and continues to the Osborn Fault. This edge is the highest edge, is on the course or strike of the vein, and the dip of the vein is southeasterly from this edge at an inclination of 40 degrees from the horizontal. It is true that you can go southwesterly from the curled up end edge downward for a distance of one or two hundred feet; but after leaving the south side line of the Stewart Fraction Claim, in following the vein southerly in the direction of the located end lines of the Stewart Fraction Claim extended, one would travel upon a level. An examination of the maps by the Court will show that the inclined shafts are southeasterly, whereas the level drifts are run in a southwesterly direction.

The learned counsel for the Stewart Mining

Company contend that because in following the vein from the curled up edge against the Osborn Fault in the direction of the end lines of the Stewart Fraction Claim southerly one may reach a lower level than that edge, that this establishes the contention that such edge constitutes an apex. In other words, they contend in effect that any terminal edge of the vein from which one may go downward in the direction of the end lines constitutes an apex. The fallacy of this contention was illustrated by Prof. Lawson, one of the witnesses for respondent, who testified as follows:

> "Now it is entirely possible to go downward even from the bottom of the vein. I can take a downward course from the bottom of the vein and keep on going downward and be in the vein all the time."
>
> (Record, page 299.)

He illustrated his testimony by the following diagram:

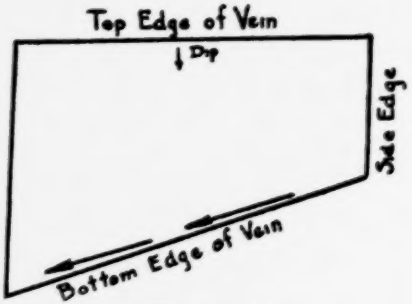

Figure 2.

and then said:

"This diagram shows the kind of a downward course which you have in this case."

Counsel for plaintiff in error contend that in determining what constitutes the apex of a vein, the Court is entitled to consider only that portion of the vein within the claim containing the alleged apex. In other words, that the question must be approached from the standpoint of the owner of some one edge of the vein. This is a fundamental error. We are not here engaged in trying title to an edge of the vein within the Stewart Fraction Claim, but we are engaged in determining title to certain ore bodies beneath the Ontario Claim. In determining the ownership of those ore bodies, we start with the presumption that they belong to the owner of the claim overlying such ore bodies. If someone asserts title to the ore bodies by virtue of an extralateral right, the position of these ore bodies may be looked to in determining the location of the apex of the vein of which the ore bodies are a part. The ore bodies within the Ontario dip easterly (Finding 5, Rec., page 15). In looking for the top of the vein containing those ore bodies you would look up the dip in a westerly direction and not northerly upon a level.

The Idaho District Court and the Supreme Court of Idaho are supported by the decision of Judge Dietrich, sitting in the United States District Court, and by the decision of the United States Circuit Court of Appeals for the Ninth Circuit in the case of Stewart Mining Company vs. Bourne. The decision of the Circuit Court of Appeals will be found in 218 Fed., page 327 (Advanced Sheets).

In that case the identical contention was made which is being made in this case; the same vein was involved; the same mining claims were involved, and the evidence was identical. Indeed, the evidence in this case was by stipulation made the evidence in that case. Each of those Courts upon an examination of the evidence, determined that the edge of the vein against the Osborn Fault did not constitute the apex, but was the end of the vein on the line of its dip.

Judge Dietrich, sitting in the United States District Court, analyzed and answered the arguments of plaintiff so clearly that we cannot resist the temptation to quote at length from his opinion. As heretofore indicated this opinion has not been reported. He said:

"The line of the edge along the Clancy Fault (that is, A-B on Figure 1, *ante*) is approximately horizontal, but upon the edge along the Osborn Fault the point C is about four hundred feet lower than the point B, and, in turn, C is about on a level with D and E (*i. e.*, the ore bodies beneath the Ontario). It will thus be seen that the downward inclination of the terminal edge from B to C approximately corresponds with, although it is perhaps a little less than, the general southeasterly dip of the vein from the edge A-B. Now the primary and controlling question is whether this terminal edge at B-C is to be regarded as a part of the apex of the vein, or only the end thereof. * * * It is to be added that not only is the general course of this vein northeasterly and southwesterly, but such is the prevailing course of other veins in the district. * * * It is sufficient to say that plaintiff predicates its claim wholly upon the assumption that the terminal edge at B-C is apex; and whether this assumption is well founded or not is therefore the cardinal question. That a downward course may be pursued upon the vein from this edge to the disputed ore bodies is conceded; but we are not to conclude that an edge is the apex merely because the vein may be followed therefrom upon an inclination downward; clearly cases may very well arise where such a course can be followed from an undercut or bottom edge. Nor is it controlling that such downward course may be parallel with the end lines. The real relation of any given edge to the vein is in no wise affected by its relation to the boundary lines of the claim embracing it. These lines are wholly artificial and fortuitous,

and if an edge is the top or apex of the vein it is such regardless of the question as to how the boundary lines of the claim are laid, or indeed whether any location at all has been made. If A-B and B-C were straight lines, thus forming a true angle at B, such angle would be less than ninety degrees, and under the definition relied upon by the defendant B-C would unquestionably be a bottom edge, and yet from such edge there would be a downward inclination from the vein in vertical planes parallel with the end lines of the claim.

"It is not seriously controverted that the general onward course or strike of the vein is, as indicated, in the direction of the Clancy Fault (*i. e.,* A-B), and that if we consider only such general course the angle A-B-C is less than ninety degrees; but it is pointed out that by reason of the curvature in the vicinity of B, no such angle in fact exists. This may be true, but it is not thought that a slight bending of the vein, due to a local disturbance of an abnormal character, should be controlling or should blind us to the true relation of the edge along the Osborn Fault to the admitted apex at A-B. Generally speaking, the miner has the right to rely upon conditions as they now exist, and not as they may have been in the beginning, but the statute must be reasonably applied, and in making such application the original position of the vein and the relation of its several parts to each other must be taken into consideration. Otherwise, for example, where, through faulting, the original vein has been broken up and parts thereof measurably dislocated, each part might be held to be a distinct vein, with a fault-edge for an

apex. When we consider that not only the general course of this vein, but the general course of other veins in the district, is substantially thirty degrees east of north, that the sharp inclination at the edge B-C is local and abnormal and that the primary and persistent dip is to the southeast and not to the southwest, it is thought that the slight curvature at B, probably due to the bending of the vein as the result of fault disturbances, should be disregarded, and that in measuring the angle at B we should have regard for the prevailing courses of the lines B-A and B-C. Emphasis is added to this view when we remember that, while the definition to which reference has been made, may afford a good general working rule, it is not necessarily of universal application. It is without statutory origin, and there rests upon the courts no obligation to adjust to it, in strict detail, each concrete case. We are here primarily concerned in determining, not whether there is an angle at B, or how the angle shall be classified, but whether the edge of B-C is the top of the vein. If in the course of this inquiry the definition can be intelligently applied, it may be employed as an aid to a right conclusion. But in the case of two possible applications to an exceptional condition it must either be abandoned entirely as an unreliable guide, or that application must be made which gives a result conformable to our conception of the general meaning of the words 'top' or 'apex.' These terms were doubtless used in the statute as synonyms, and were employed in no occult or mysterious sense. As has been frequently observed, they are not miners' words, and when adopted by Congress to express its in-

tent they were without peculiar or technical significance arising from their use in the mining industry. Now if we accept the word 'top' in its usual sense, as men of ordinary intelligence commonly understand it, its inappropriateness as a descriptive term for the edge B-C is clearly apparent. If we consider only a narrow strip of the vein along this edge or confine our attention to the showing of only a few selected cross sections, doubtless a different view may be taken; but when, in the light of all of the evidence, including the numerous maps and charts, and especially the defendant's large model, which is admitted to be substantially correct, we project the vein in its entirety and contemplate the position it occupies in the enclosing country and the relation of its terminal edges to each other and to the horizon, the first and persistent impression undoubtedly is that the edge B-C is its end or side, and not its top or apex; and such is the view I feel bound to adopt."

The case of Duggan v. Davey, 4 Dak. (Terr.) 110, is directly in point. The following diagram will show the similarity between the two cases:

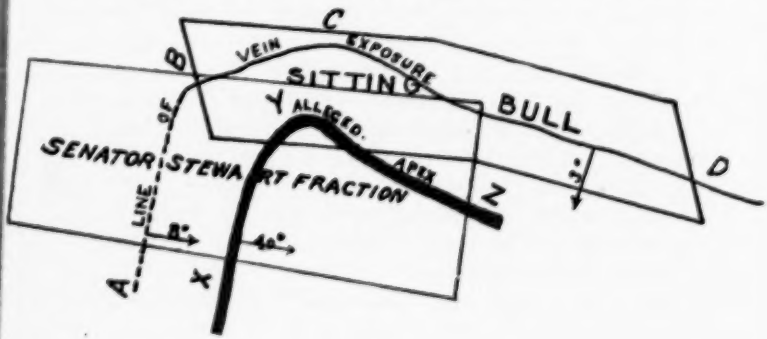

Figure 3.

The question in Duggan vs. Davey was whether the edge of the vein in the Sitting Bull Claim from B to D constituted an apex. The edge of the vein in the Sitting Bull dipped southerly at an angle of three degrees from a horizontal; the vein dipped easterly at an angle of eight degrees from a horizontal. The Court held that the edge of the vein B-D was the end of the vein along the line of its dip and not the apex thereof. We have placed on this diagram a correct representation of the lines of the Stewart Fraction Claim, together with the apex as claimed by the Stewart Company, in order that the Court may see that the decision in Duggan v. Davey is decisive in this case. In fact, this Court would not be required to go as far as the Court did in the case of Duggan v. Davey to determine this question in favor of respondent. The vein in the Stewart Fraction Claim dips easterly forty degrees from a horizontal; the edge of the vein from X to Y is practically level; the edge of the vein from Y to Z has an inclination southeasterly thirty degrees; and a cross section through the vein near the east end line of the Stewart Fraction Claim and parallel thereto (and which includes the curled up edge of

the vein) shows an average inclination of eight degrees.

The logic of the decision in Duggan v. Davey is approved by Mr. Lindley and Mr. Costigan. Lindley on Mines (3rd Ed.), Sec. 310; Costigan, Mining Law, p. 138.

One text writer (Mr. Snyder) takes the position that while the definition of "top" or "apex" was correctly given in the Duggan v. Davey case, there was still such a slight difference between the dip southerly from the edge C-D in the Sitting Bull Claim and the dip easterly from the westerly edge A-B, that the Court should have ascertained what the general direction of veins in that section of the country was, and have resolved the question accordingly. If that theory were to be adopted in this case, it would result in an affirmance of the present judgment, because, as Prof. Lawson pointed out, the general course of the veins in the system of which the Senator Stewart vein is a part, is about north thirty degrees east, therefore the edge of the vein which crosses the south side line and not the edge against the Osborn Fault, would constitute the apex. (Record, p. 279.)

Plaintiff in error's glass model gives a false im-

pression of the position of the edge of the vein with reference to the ore bodies in dispute. Notwithstanding the fact that counsel contend that the direction of the end lines of the claim covering the edge of a vein is of paramount importance, in preparing a model, plaintiff's witnesses prepared the slides in a direction different from the direction of the end lines in order to give a false impression of the downward inclination of the vein. (Record, p. 471.)

Most of plaintiff's cross section maps are open to the same objection.

II.

DOWNWARD COURSE.

WAS THE SUPREME COURT OF IDAHO CORRECT IN DENYING TO PLAINTIFF IN ERROR THE RIGHT TO PURSUE THE VEIN ON ITS ONWARD COURSE?

If the Idaho Courts committed no reversible error in holding that the alleged apex within the Stewart Fraction Claim had no existence, it is unimportant whether the Supreme Court of Idaho was right or wrong in holding that a mineral vein cannot be followed more upon its onward course

than upon its downward course, because it has been repeatedly held by this Court that one claiming an extralateral right must show (1) that he owns the apex and (2) that the lines of his claim are so laid with reference to the apex that he is entitled to extralateral rights in the direction claimed.

U. S. Min. Co. v. Lawson, 207 U. S. 1.
King v. Amy Co., 152 U. S. 222.

If, on the other hand, this Court should hold that the apex of the vein in controversy "crosses the east end line of the Stewart Fraction and extends in a westerly direction substantially parallel to the side lines for a distance of 705 feet," then the correctness of the decision of the Idaho Court upon the question stated above would be a proper subject for consideration.

The Court found as a fact that the course of the vein in controversy was north thirty degrees east, and that the vein crossed the south side line at about right angles. The complaint alleged and the answer admitted that the end lines of the Stewart Fraction Claim had a course of north twenty-four degrees east. It was found that the vein dipped southeasterly at an angle of forty degrees from

the horizontal (Rec., p. 552); that the miners in following the vein southwesterly after leaving the fault pursued the vein on a level. (Rec., p. 16; Finding 13.)

So the precise question before the Idaho Supreme Court upon this branch of the case was this: May a vein be followed beyond the side line of a claim when such pursuit must be made upon a level and within six degrees of the true strike or onward course?

The Court below answered this question in the negative. It pointed out the distinction between the onward course and the downward course and suggested that the pursuit of a vein in the direction of its strike at an angle of less than forty-five degrees to the course would not be following the vein on its "downward course."

It is unnecessary for us to defend the correctness of the latter suggestion which was not necessary to a decision because the Court was clearly right in deciding that the pursuit of a vein on a level plane and within six degrees of the true strike of the vein was not authorized by the Statute which created the extralateral right and gave the owner of the top of veins the right to

follow those veins "in their course downward, throughout their entire depth." Rev. Stats., Sec. 2322. This Court has heretofore decided that to permit the pursuit of a vein on its onward course and on a level "would subvert the whole system sought to be established by the law."

Argentine M. Co. v. Terrible M. Co., 122 U. S. 478.

Flagstaff Co. v. Tarbett, 98 U. S. 463.

Southern Nev. Co. v. Holmes M. Co., 73 Pac. 759.

Del Monte Min. Co. v. Last Chance, 171 U. S. 55.

If a vein could be followed upon its strike or onward course there would have been no reason for the decision of this Court that when a vein crosses the side lines those side lines become the end lines.

King v. Amy Co., 152 U. S. 222.

III.

SECONDARY VEIN.

DID THE SUPREME COURT OF IDAHO ERR IN HOLDING THAT IF THE VEIN IN CONTROVERSY WERE A SECONDARY VEIN IT COULD NOT BE FOLLOWED BENEATH THE SURFACE OF THE ONTARIO CLAIM?

The findings of the trial Court do not disclose whether the vein in controversy is the discovery vein in the Stewart Fraction Claim, or whether it is a secondary vein. Indeed there was no evidence upon the subject, but the Supreme Court of Idaho assumed that the vein under discussion is a secondary vein; but the Court denied the contention of counsel that the vein could be followed beyond the side line of the Stewart Fraction Claim which it crossed at about right angles. This conclusion was undoubtedly sound because such pursuit would not begin from the apex thereof but would begin from the side edge and would be made along the strike instead of on the vein's downward course.

This Court held in Walrath v. Champion Mining Company, 171 U. S. 293, that the lines crossed by the discovery vein became the end lines of all veins. But in that case the onward course of the secondary vein was practically parallel to the side line of the claim. In the present case the Court found that the vein in controversy has a course about at right angles to the south side line and nearly parallel to the end lines.

The Statute (Rev. Stat. 2322) says that "all

veins" apexing within a claim may be pursued throughout *"their* entire *depth."* It does not say that the secondary vein may be pursued on a horizontal plane and on the strike of the vein, provided the primary vein is so located that it may be followed downward. If this were true there would be no reason for the cross lode section of the Statute (Sec. 2336).

This Court said in Flagstaff Mining Co. v. Tarbet, 98 U. S. 463:

> "The right to follow the dip outside of the side lines is based on the hypothesis that the direction of these lines correspond substantially with the course of the lode or vein at its apex on or near the surface."

This statement is as true of secondary veins as it is of primary ones.

Therefore the Supreme Court of Idaho was right in denying the claim of plaintiff in error to pursue a secondary vein on its strike which was found to occupy a position at right angles to the course of the assumed discovery vein. Its decision was in accordance with the authorities:

Costigan on Mining Law, pp. 414, 448, 449.

2 *Lindley on Mines* (3rd Ed.), p. 1397.

Cosmopolitan Min. Co. v. Foote, 101 Fed. 518.

In Stewart Mining Company v. Bourne, 218 Fed. 327, the Court of Appeals for the Ninth Circuit denied the claim which is here made because there, as here, the complaint alleged that the apex of the vein in controversy ran lengthwise of the mining claim, whereas the evidence showed that there was no such apex; and the Court held that if plaintiff had claimed extra-lateral rights on the strike of a secondary vein which crossed one side line at right angles but did not reach any other line of the claim, such contention would have been denied.

CONCLUSION.

We respectfully submit that this Court is without jurisdiction, because the Court below rested its decision upon a question of fact. The decision of that Court in any event was right because the words "top or apex" do not include the bottom or side edge, and because neither a primary nor a secondary vein may be pursued upon an onward course or upon a level plane. The trial Court, the Idaho Supreme Court, the United States District

Court for Idaho, and the Circuit Court of Appeals are unanimous in the conclusion that the edge of the vein claimed by plaintiff to be the apex is not the apex but is the end of the vein on the line of its dip.

Respectfully submitted,

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